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Catalogue of the described **TENTHREDINIDÆ** and **UROGERIDÆ** of
North America.

BY EDWARD NORTON.

(Continued from page 242.)

Sub-family 4, **LYDIDES**, Westw.

Lydides, Westw., Mod. Int. ii, App. 54, 1840.

Lydiens, Brullé, Hym. iv. 658. 1.

Tenthredinides, Sec. 8, Steph. Brit. Ent. Mand. vii, 95.

Tenthredonidæ, Genus 4, 11, 12, Hartig, Die Blattw.

Antennæ multiarticulate, short or lengthened, setaceous, simple or pectinate; posterior tibiæ often with side spurs; labrum minute; saws but slightly serrated at tip, dilated and elbowed at the base.

56. **LOPHYRUS**, Latr.

Lophyrus, Latr., Hist. Nat. des Crust., Lepel. Mon. 53., Leach, Steph., Hartig. &c.

Hylotoma ♀, Fab. Syst. Piez., 20, 1.

Diprion, Schrank, Fauna Borealis.

Pteronus, Jurine, Hym. 1807, 61.

Tenthredo, Panz., Geoffroy, &c.

Wings with one marginal and four submarginal cells, the cross-nervure between the 1st and 2nd incomplete; 2nd and 3rd submarginal cells each with a recurrent nervure; under wings with two inner cells.

Antennæ 17—23 articulate, among the females serrate, with the males bi-pectinate, the rays short toward the apex, sometimes the several final joints bearing but one; terminal joint simple.

Head transverse, wide in the males, in the females small; maxillæ with a tooth-like horny continuation on the inner sides; clypeus small, with distinct, wavy edge; labrum small, roundish; mandibles obtuse, 3-toothed, with horny base.

Abdomen broad, depressed in females.

Legs simple, tibiæ with two acute spurs at apex.

Larvæ, 22-footed, not hairy, social, appearing in great numbers, feeding on the pine and fir.

The females are much larger than the males.

They form a simple opaque cocoon, which is very small in proportion to the size of their bodies.

They generally come forth in about two or three weeks, but Curtis records one instance in which an individual remained two years unchanged. Dr. Hartig has given complete details of the transformations of seventeen species, (European).

The imago presents great variations in color, so that caution should be exercised in determining new species; Dr. Hartig has described no less than sixteen varieties of *L. pini*.

tibiæ as usual; claws long, simple; wings unequally blackish, obscure, clearest at 1st discoidal cell, marginal cell appendiculate; 2nd submarginal cell with two recurrent nervures; lanceolate cell petiolate; under wings with one inner cell.

Cordova, t. c., Mexico. One ♂. (H. de Saussure.)

The marginal cell is rounded at the end, leaving a small apical space, or cell at its tip.

2. *Lophyrus cordoviensis*, n. sp.

Color black, legs partly white; wings sub-hyaline. Length 0.22. Br. wings 0.14 inch.

♂. Antennæ black, 15-jointed; pectination of 3rd joint single, serrate, the joint stout; pectination of remainder very slender, produced, not pilose; head and whole body black; abdomen slender as in *Nematus*; legs black, the anterior pair obscure reddish white before; hinder spurs as usual, claws long, simple; wings blackish, semi-obscure; marginal cell appendiculate; first submarginal oval, as long as second; the second recurrent nervure received at intersection of second and third submarginals; lanceolate cell petiolate; under wings with one inner cell.

Cordova, t. c., Mexico. One ♂. (H. de Saussure).

3. *L. Fabricii*.

Lophyrus Fabricii, Leach, Zool. Misc. iii, 1817. 3.

Lepel. Mon. Tenth., 56, 161.

Fitch, Nox. Ins. iv, 60, 276.

♀. Antennæ black; head luteous, spotted with fuscous; abdomen and legs luteous; wings sub-fulvous hyaline. ♀ Long $3\frac{1}{2}$ ex. alar. $7\frac{1}{2}$ lin. Antennæ of female 16-articulate.

"Georgia." Not seen.

4. *L. compar*.

Lophyrus compar, Leach, Zool. Misc. iii, 1817. 4 ♀ ♂.

Lepel. Mon. Tenth., 54, 153.

Fitch, Nox. Ins. iv, 60, 277.

♀ ♂. Antennæ, head, thorax and abdomen black; legs pale, femora black; wings hyaline. Antennæ of female 16-articulate.

"Georgia." Not seen.

5. *L. pinus-rigida*.

Lophyrus pinus-rigida, Norton, Packard's Guide, p. 228, 1868.

♀. Length 0.30. Br. wings 0.65 inch. ♂. Length 0.25. Br. wings 0.55 inch.

♀.—Color of body luteous-brown; antennæ 17-jointed, brown, a line joining the ocelli, a stripe down each of the side lobes of the mesothorax, and the sutures of metathorax, black; body pale beneath; the trochanters and base of the tibiæ waxen-white; claws with an inner tooth

near the middle; wings faintly clouded; cross-nervure of the lanceolate cell straight.

♂.—Color black. Antennæ black, quite short, 15-jointed, with twelve rays on each side, those at the base nearly as long as on the sixth and seventh joints of flagellum; apical joint simple, enlarged at base; abdomen beneath and at base yellow-brown; legs at base, of the same color; below the knees whitish.

Massachusetts. (A. S. Packard.)

The larvæ were collected by Mr. Fish at Eastham (Cape Cod), ravaging the young pitch-pines of that region. The eggs are laid singly in the side of the pine needle, sometimes one on each side of the leaf.

6. *L. Abbotii*.

Lophyrus Abbotii, Leach, Zool. Misc. iii, 1819, 2 ♀. Lepel. Mon. Tenth. 56, 159. Fitch, Nox. Ins. iv, 60, 275. Riley, Prairie Farmer, May 25, 1859. Packard, Guide, p. 226, fig. 153.

♀.—Long, 0.32; wings 0.66 inch. ♂. Long, 0.25; wings 0.50 inch.

♀.—Antennæ 17-jointed, stout; a strong blunt process as long as width of joint on all but the final article, which is quite short and partly concealed in the one preceding; nasus emarginate; the three apical joints of maxillary palpi short, third joint as long as fourth and fifth; head, thorax above and pleura covered with coarse separated punctures; spurs of hinder tibiæ long and blunted; claws with a strong inner tooth distant about one-third their length from the tip; color yellow-brown; antennæ black, with the basal half of third joint pale; tip of mandibles, sides of metathorax and claws black; palpi, tegulæ, collar, pleura, sides of abdomen and tibiæ waxen-white; wings faintly clouded; lanceolate cell with slightly oblique cross nervure.

♂.—Antennæ 18-jointed, rays apparently fifteen on each side (C. V. Riley states eighteen on one side and fifteen on the other); apical article clubbed; color of antennæ and body above black; labrum, palpi, tegulæ and edge of collar white; remainder of body and legs yellow-brown; spurs of inner tibiæ apparently not cleft; basal half of wings clouded; lanceolate cell with straight cross-nervure.

Hab.—Georgia, (Leach); Indiana, (Riley).

Found destroying the leaves of the white pine at Valparaiso, Ind. "These flies appear early in June. There is but a single brood of larvæ which remain on the trees in Illinois until November (!) and hibernate before changing into pupæ."

7. *Lophyrus Akhursti*, n. sp.

♀. Long, 0.30. Br. wings, 0.66 inch.

♀.—Antennæ 17-jointed, quite tapering toward the tip; processes

about half as long as width of joints, shorter toward the tip; apical joint blunt, without process, as long as the preceding; nasus scarcely emarginate; third joint of maxillary palpi a little longer than fourth; the three final joints longer and more slender than those of *L. Abbotii*; punctures coarse, separated; claws with a rather obtuse inner tooth; color of antennæ ferruginous-blackish; color of body ferruginous; sutures of face, thorax and abdomen, most of metathorax and part of third and fourth segments of tergum blackish; pleura dark brown; wings slightly clouded; lanceolate cell with straight cross-line.

New Jersey. (J. Akhurst.) One ♀.

It is possible that a further comparison of species may prove this to be the *L. pinus-rigida*.

8. *L. abietis*.

Lophyrus abietis, Harris, Inj. Ins, 1841, 2nd Ed. 1852. 411.

Fitch, Nox. Ins, iv, 63, 283.

Color of female mostly testaceous; of male black, legs testaceous; wings hyaline. Length ♀ 0.28. Br. wings 0.56 inch. Length ♂ 0.24. Br. wings 0.48 in.

♀. Color yellowish-brown. Antennæ black, base of third joint pale, 18-jointed, thickest in middle, serration distinct, that of third joint as deep as those succeeding; head of one color; a stripe on each side lobe of mesothorax and the sutures, metallic black; body and legs beneath paler than above; hinder spurs as usual; claws with a short inner tooth near the tip; wings hyaline, nervures blackish, stigma and costa yellowish.

The male has the antennæ 21-jointed, short, rays longest in middle (fifth to ninth joints), each covered with short, strong hair; those on basal joints double and long; head and thorax black; tergum dark piceous; pleura and breast black; venter reddish brown; legs reddish yellow, darkest at base; wings hyaline, iridescent, apical half of under wings clouded.

Massachusetts, Connecticut.

The larva, feeds on the fir leaves. It is 22-footed; is five to six tenths of an inch long, thickest before the middle, tapering behind; the head and three anterior pair of legs are black; body pale green, yellowish beneath; a wide dark green stripe down the back, separated by a paler stripe and two dark green stripes on each side; hinder legs yellowish. It is social in its habits and feeds in companies until fully grown. It appears in June and July. The cocoons are oblong oval, rounded at ends, of a tough silk, whitish when new. Length 0.35 inch. They are generally made in August. They are formed on the leaves of the trees on which it feeds and often adhere to them until

the next season. Most of the insects come forth soon after the fourteenth day, but some are delayed and appear during the ensuing months. Several hundred specimens bred by myself in Farmington, Conn., came forth mostly in August. If there is a second brood in September, the numbers must be comparatively small, for I have not seen them nor any fresh cocoons late in the season. Dr. Harris states that the cocoons are mostly formed on the ground among the roots of plants. But in the above instances very few were found except upon the branches of trees. When the insect comes forth from the cocoon it cuts a circular piece from on one end as cleanly as with a knife. This sometimes remains as a sort of lid. This larva is very destructive, remaining for several years in a region and causing the foliage of the fir trees to appear brown as if burnt by fire.

From the cocoons of *L. abietis*, I have bred the following parasitical insects, viz :

1. *Ichneumon rubicundus*, Cresson.
2. *Ichneumon fungor*, Norton.
3. *Cryptus Lophyri*, n. sp. ¹
4. *Pimpla inquisitor*, Say.
5. *Hemiteles utilis*, n. sp. ²

1. **Cryptus Lophyri**, n. sp.—Length 0.30, with ovip. 0.35. Br. wings 0.50 inch.

♀—Color black, part of abdomen rufous. Antennæ three-fourths the length of body, about 30-jointed; color dark rufous, palest on 3rd and 4th joints, and darkest toward apex; semi-annulate with yellow from middle of 6th to middle of 11th joints (the annulus is almost complete). Head and thorax black, punctate: a pale narrow line, partly or wholly interrupted in middle down each inner orbit; tegulæ and points at the two sharp angulate corners of metathorax, sometimes also the scutel and post-scutel yellow; abdomen rufous upon the petiole, the 2nd and basal half of 3rd and sometimes all of 3rd segments and the apical edge of the following segments; the remaining segments black, except the apex, which is white; legs rufous, the hinder pair darkest; the apex of hinder femora, tibiæ and tarsi black, with a band at base of their tibiæ and base of first tarsal joint; wings hyaline.

♂—Antennæ black, without annulus, 2nd basal joint rufous beneath; the inner orbital line unbroken; nasus and mandibles yellow; tegulæ, edge of collar, scutel and post-scutel, the basin of metathorax, except a spot at reception of petiole, yellow; abdomen rufous, but darker or blackish toward the apex, with a more or less distinct whitish spot on the apical segment; hinder tarsi all yellow except a spot near the base of 1st joint and the claw-joint, which are black.

Connecticut. Fourteen ♀ and seven ♂ bred.

2. **Hemiteles utilis**, n. sp.—Length 0.15. Br. wings 0.25 inch.

♀—Color honey-yellow, apex of abdomen black, wings with two brown bands. Antennæ nearly as long as body, about 21-jointed, color of body, darker toward apex, base of each joint blackish; eyes slightly diverging below; head and body of one color as far as middle of 3rd abdominal segment, beyond which it

6. *Campoplex genuinis*, Norton.
7. *Aleiodes parasiticus*, n. sp. ³
8. *Pteromalus verditer*, n. sp. ⁴
9. *Cheiopachus nigro-cyaneus*, n. sp. ⁵
10. *Musca carnaria*.

I first saw the *Lophyrus abietis* about ten years ago on the *Abies* in this region. For some years all of our trees were stripped of their leaves, while the progress of the insects southward was very slow. Two

is blackish; ovipositor about two-fifths the length of abdomen; two blackish stripes, sometimes wanting, one on each side lobe of mesothorax, and a blackish spot behind scutellum; legs the color of body, hinder tibiae darkest but having their base pale, all the claw joints of tarsi black; upper wings white-hyaline, clear at tips, crossed by two wide bands, the first rising near base of stigma, the second beyond its middle and covering the whole marginal cell, with a whitish clear spot near the apex of stigma; stigma large, dark, whitish at base; under wings hyaline, iridescent, with more or less of whitish above.

Connecticut. Ten ♀ bred.

3. *Aleiodes parasiticus*, n. sp.—Length 0.25. Br. wings 0.50 inch.

Color honey yellow; the head, the metathorax and apex of abdomen black, with the form of *Chelonus*. Antennae nearly as long as body, slender, color of body, blackish toward tip, the two basal joints ferruginous; thorax honey yellow, pleura and metathorax black, petiole and two next segments honey yellow, apex of third and all the remaining segments black with a band of whitish hair at the base of each; legs the color of body: the tips of femora, tibiae and tarsi black, which is most distinct on the hinder legs; wings cloudy.

Connecticut. One ♀ bred. I have taken about one hundred of this species elsewhere. It seems to be very common.

4. *Pteromalus verditer*, n. sp.—Length 0.12–13. Br. wings 0.18–20 inch.

♀—Color blue green, apex of abdomen purple bronze. Antennae 13-jointed, somewhat clavate; the four basal joints yellow, remainder dark, pilose; head and prothorax green, thorax and base of abdomen blue green; apical half of abdomen purple bronze; head and thorax coarsely pitted; abdomen polished, its form almost that of an inverted pyramid with the apical segments flattened; coxae all green (sometimes the middle part of the femora also); remainder of legs yellow, the apical tarsal joints blackish.

♂—The color of the male is bright grass green; the antennae are pale yellow except near apex; there is a yellow band about the middle of abdomen; legs pale yellow.

Connecticut. Sixteen ♀, eight ♂ bred.

5. *Cheiopachus nigro-cyaneus*, n. sp.—Length 0.10. Br. wings 0.16 inch.

♀—Color dark blue black, varying to purple. Antennae 13-jointed, the two basal joints nearly as long as all the rest, yellow; scape blackish, 3rd joint not much shorter than 4th or 5th. Head transverse, wider than thorax, prothorax narrow and narrower than thorax transversely; abdomen polished, flattened, ovalo-triangular; legs yellow, coxae black, the anterior and posterior thighs somewhat thickened.

Three specimens bred. I cannot feel sure of the genus of this insect.

years ago they had reached the trees of a friend one mile south, while my own trees were entirely deserted by them. Perhaps the crowds of parasites which follow them have destroyed all those left behind. Most of these parasites in leaving the cocoon, burst their way out at the side, cutting a rough passage with their jaws, not clean and sharp like the *Lophyrus*.

9. *L. abdominalis*.

Lophyrus abdominalis, Say, Long's 2nd Exp., II, 1824, 315. ♀.

"Antennæ 18-jointed, pale yellowish; thorax with black spots.

"♀.—Head reddish yellow; a large, transverse, black spot above the antennæ descending on each side between the antennæ and the eyes, to the sides of the mouth, and ascending by two distant narrow lines over the vertex to the occiput; mandibles piceous at tip; thorax with large black spots, occupying the greater portion of the surface; scutal pale yellow; wings hyaline, nervures and stigmata fuscous; thighs dusky at base; tergum yellow, tinged with rufous, whitish on the lateral margin; segments piceous on their posterior edges.

"North-west Territory."

One specimen bred by Mr. Akhurst of New York, on the pine, resembles this, except that the abdomen is dark rufous above, the serration of the antennæ is not prolonged and is shortest on the 3rd and 4th joints; head wide; hinder spur as usual, claws with an obtuse tooth removed from the tip; there are two cross lines, one straight and one oblique on each lanceolate cell; head and thorax covered with sparse deep punctures. Length 0.28. Br. wings 0.58 inch.

10. *Lophyrus pinetum*, n. sp.

Female testaceous, spotted with black, wings hyaline. Male mostly black. ♀. Length 0.32. Br. wings 0.64 inch. ♂. Length 0.28. Br. wings 0.56 inch.

♀.—Color brownish yellow; antennæ 18-jointed, short, hardly longer than width of head, serrate, the teeth prolonged, (about as long as width of the joint), tooth of 3rd article as long as any; color black, most of 3rd article pale; head without black lines; a piceous stripe on each side-lobe of mesothorax; scutal pale; sutures of metathorax and most of tergum dark blackish brown, the latter with paler spots in middle; edges of tergum, body beneath and legs pale yellowish, femora darker; hinder spurs as usual, inner claw tooth large, obtuse, removed from tip; wings hyaline, stigma and costa yellowish; lanceolate cell with nearly straight cross-line.

♂.—Antennæ 19-jointed, shorter than in *L. abietis*, the rays much prolonged, tips of five apical rays enlarged, hair on rays long and coarse; head nearly as wide as thorax; head and thorax black; abdomen dark

piceous above, a little paler beneath; mouth, tegulæ and anterior angle and a spot on pleura piceous; legs yellow red; middle tibia with a cleft spur.

Cleveland, Ohio.

Six specimens (4 ♀, 2 ♂), received from Mr. J. Kirkpatrick, Cleveland O., taken from the pine in large numbers. The larvæ were described by him in the *Ohio Farmer*, Cleveland, Vol. IX, Nov. 24, 1860, but unfortunately I have not access to the paper.

11. *L. americanus*.

Lophyrus americanus, Leach, Zool. Misc. III, 1817.

Lepel., Mon. Tenth. 55, 158.

Fitch, Nox. Ins. iv, 59, 274.

"Antennæ black, head luteous. Thorax luteous spotted with black. abdomen deep luteous. Legs luteous. Wings hyaline, at base tending to sub-fulvous. Antennæ of the female 19-jointed.

Georgia. ♀ Long 5 lin. exp. wings 9 lin."

This is very much like *L. pinetum*, except in the number of joints of antennæ.

12. *L. Lecontei*.

Lophyrus Lecontei, Fitch. Nox. Ins. iv, 58, 273. Riley, Prairie Farmer, May, 1868. Packard, Guide, p. 226.

Length, ♀ 0.40—0.50. Br. wings, 0.70—0.82 inch.

♀.—Antennæ 20-jointed, tapering, the processes at sides of the five or six basal joints of flagellum longer than width of joints; final joint as long as the preceding; nasus slightly concave; maxillary palpi with third joint short and globose, sixth joint longer than fourth or fifth; punctures coarse, separated, most distinct behind the scutel; color of body yellow-brown, antennæ blackish; metathorax and tergum and a stripe down each side of venter black; tips of palpi yellow; remainder of palpi, edges of anterior angle, pleura, outer edges of venter and knees, waxen-white; wings faintly clouded; lanceolate cell with oblique cross-nervure.

♂.—I have not seen the male. Mr. Riley describes it as follows: "Antennæ 24-jointed, having on one side seventeen large, and on the other seventeen small branches, the second joint furnishing but one stout branch and the terminal two also furnishing but one each. Thus one counts twenty large branches on one side and seventeen small on the other." Mr. Riley evidently is in some error here, as the antennæ are 22-jointed, as the second joint mentioned above is probably the first joint of flagellum on third joint of antennæ.

Larva.—About one inch long; color dirty or yellowish-white, and

void of any greenish hue. The dorsal black marks are wider anteriorly than posteriorly, and are usually broken transversely in the full grown individuals; also further apart than in *L. Abbotii*; lateral spots subquadrate, with an additional row of smaller black marks below them; head shining reddish-brown, with black eye spot; jaws tawny; anal segment entirely black above; venter, together with pro-legs (14 abd. and 2 anal), immaculate; feet black, with white joints. When young it is without marks.

Pupa.—A brown cocoon, larger than that of *L. Abbotii*.

New York, (Fitch). New Jersey, (Riley).

Found October, 1867, by Andrew S. Fuller, at Ridgewood, New Jersey, on the scotch and austrian pines in myriads, eating all the leaves as they go. Imago began to come forth February 15th; cocoon found between leaves and on ground.

13. *Lophyrus Edwardsi*, n. sp.

Long, 0.25. Br. wings. 0.50 inch.

♂.—Antennæ apparently 24-jointed, rather long, final joint slender, clubbed, the preceding joint with but one long ray, and the rays slender, that on third joint as long as any, first and second joints greatly enlarged; head and body polished; punctures coarse, separated; nasus with a shallow emargination; the three apical joints of palpi long and slender; middle tibiæ with a spur cleft at tip; claws with a large inner tooth near the middle; color black; the palpi, tegulæ, venter and legs yellow-red; wings hyaline, costa pale, nervures blackish; lanceolate cell with straight cross-line.

San Francisco, California. (Henry Edwards.) One specimen.

14. *L. insularis*.

Lophyrus insularis, Cresson, Proc. Ent. Soc. Phil., iv, 1865.

Cuba.

15. *L. interruptus*.

Hylotoma interrupta, Fab., Syst. Piez., 21. 4.

Lophyrus! interruptus, Lepel. Mon. Tenth. 57. 164. ♀.

South America.

Sub-genus II (*Monoctenus*), Dahlb.

Antennæ of the males with one row of pectinations. Lanceolate cell open at shoulder, without cross line, but contracted in middle. Tibial spurs sharp.

Europe.

57. **PTERYGOPHORUS**, Klug.

Wings with one marginal and three submarginal cells, the 2nd receiving two recurrent nervures.

Antennæ multiarticulate, the two basal joints straight, the remainder inserted obliquely; in the males pectinate, in the females serrate.

Australia.

58. **TARPA**, Fabr.

Tarpa, Fabr. Syst. Piez. 1804, 19.

Megalodontes, Latr. Hist. Nat. des Ins. 3, 302.

Cephalcia, Jurine.

Diprion, Schrank.

Wings with two marginal, and four submarginal cells; lanceolate cell with oblique cross-line.

Antennæ 15—18-jointed; generally the middle articles are prolonged obliquely and serried one against another.

Posterior tibiæ with two side spurs.

Europe, Asia.

59. **LYDA**, Fabr.

Lyda, Fabr. Syst. Piez. 1804, 43.

Pamphylus, Latr. Hist. Nat. des Ins. 3.

Cephaleia spec. Jurine, Hym. 1807, 65.

Psen, Schrank.

Tenthredo spec. Panz. Lin. &c

Wings with two marginal, four submarginal and three discoidal cells; lanceolate cell with oblique cross-line, under wings with two inner cells.

Antennæ setaceous, slender, 19—36-jointed, the 1st and 3rd generally the longest.

Head generally as wide as thorax; body stout; abdomen much flattened; nasus rounded or slightly emarginate; labrum obtusely lance-shaped; mandibles lengthened, 3-toothed; maxillary palpi 6-jointed, the two basal joints short; labial palpi 4-jointed, the longest, thickened in the middle.

Anterior tibiæ with two or three spurs; posterior tibiæ with five spurs.

Larvæ with six pectoral and no abdominal legs; two 3-jointed antennæ-like organs at the side of the head; a horny appendage behind the after segments. These larvæ live in companies in webs upon pines and some fruit trees. Westwood enumerates several species which live upon leaves of the pear, the aspen and the rose. Hartig has figured a species upon the pine. Each larva spins for itself a separate case within the larger webs. It forms a cell in the ground, lined with silk, in which to pass the pupa state. They do not often appear in such numbers as to be very injurious to vegetation.

♂. Testaceous; antennæ 28-jointed, long, 3rd joint one-half longer than 4th; color brown, blackish toward apex; head large, shining, coarsely punctured, with obsolete or indistinct yellow crescents about the ocelli and spots at base of antennæ; tegulæ and spots before V-spot, two stripes on side lobes of mesothorax, scutel and behind, indistinctly paler than rest of body; a spot on each side of mesothorax near tegu-

læ, dark brown; metathorax and tergum black; sides of tergum, pleura, breast and venter brown; tip of venter and base of each segment black; legs brown, tips of coxæ and of femora paler; wings faintly clouded, stigma dark, prolonged; marginal cross nervure nearly coinciding with nervure below; cross nervure of 2nd brachial cell wanting; a bulla in middle of 1st submarginal nervure, at base of 2nd and indistinctly at base of 3rd.

Var. a. ♂. The yellow markings less distinct, black spots about ocelli and antennæ, the tergum irregularly brownish. Mt. Washington summit (Baron Osten Sacken); ♀ antennæ 36 jointed, tergum brownish, beneath pale. Penn. (Coll. Am. Ent. Soc.).

Massachusetts, N. H.

This is much like *L. ocreata* Say, and were it not for the difference in form of antennæ and the inner spur on anterior legs, it might be thought the same, although larger.

2. *L. brunnicans.*

Lyda brunnicans, Norton, Proc. Ent. Soc. Phil. iii, 1864, 15, 31, ♀.

Ochre brown, with many yellow spots on head and body. Length 0.48. Br. wings 1.06 inch.

♀. Color dark testaceous; antennæ long, slender, about 36-jointed, color of body; head polished, with sparse punctures; edge of nasus irregular, two oval spots on occiput, enclosed by two semilunate marks which are enlarged at ends and touch the eyes; two obsolete spots above and two larger spots outside of antennæ, cheeks, edge of nasus, indistinct spots on collar, on anterior lobe and base of middle lobe of mesothorax, scutel, postscutel, prothorax beneath, most of pleura, a spot above posterior coxæ, and edges of abdominal segments beneath, straw white; legs color of body; wings ample, clouded, clearest at base, nervures brown; marginal cross nervure coinciding with nervure below; 2nd brachial cell without cross nervure.

Rocky Mts.—Colorado. (Coll. Am. Ent. Soc.). One ♀.

The abdomen is very long and wide.

3. *L. maculiventris.*

Lyda maculiventris, Harris' Catalogue. (Not described.)

Black, with pale bands on venter. Length 0.40. Br. wings 0.78 inch.

♂. Color black; antennæ with 3rd joint as long as the 4th and 5th, color luteous at base, darker toward tip, a black spot on basal joint above; a spot above eyes, a wide band about lower half of orbits, nasus, mandibles, tegulæ, sides of tergum and tips of five ventral segments, luteous; legs reddish luteous; coxæ and a spot on the four anterior femora beneath black; wings hyaline, nervures piceous.

Massachusetts, (Harris' Coll.); Lake Superior, (Cambridge Mus.).
Two specimens.

4. *Lyda credita*, n. sp.

Black; spots at sides of antennæ, mouth and venter, yellow white; wings hyaline. Length 0.40. Br. wings 0.80 inch.

♂. Shining black; abdomen of equal width from base to apex. Antennæ black, the tip of each joint slenderly white, 3rd joint not enlarged, as long as 4th and 5th, (joints beyond the 12th wanting); head coarsely punctured, not pitted, tinted with blue; an indistinct dot at summit of eyes within; a large square inner orbital spot on each side of antennæ, cheeks, nasus and mouth beneath, white; venter white, with blackish spots at base of each segment; legs white, their coxæ, trochanters and femora above, black, the side spur on anterior tibiæ prostrate and so near the apex that its end reaches to it; tarsi long and slender; inner claw tooth short and obtuse and removed from the tip; wings faintly clouded, costa with a straight cross line back of the Y-nervure, 2nd brachial cell without cross nervure.

Mexico. One ♂.

5. *Lyda bicolorata*, n. sp.

Black; head brown with black spots, abdomen, except at tip, yellow brown, wings violaceous.

♀.—Color blue black; antennæ black, slender, 34-jointed; head brown, sparsely punctured, a spot at base of each antenna, a triangular spot above each eye, one about ocelli and a large spot on occiput, extending over back of head to neck, black; anterior angle brown; abdomen honey-yellow, except the two apical segments; legs black, anterior tibial spine not reaching to tips; inner claw tooth between middle and tip; wings violaceous.

Albany, N. Y. (Dr. Peck.) One ♀.

6. *L. tessellata*.

Lyda tessellata, Klug, Berl. Mag. ii, 1808, 276, Tab. 7, fig. 4, ♀. Lepel. Mon. Tenth. 10, 28.

Pamphilius tessellatus, Latr., Encyc. No. 14.

Lyda abdominalis, Norton, Proc. Ent. Soc. Phil. i. 1862, 199, ♀.

Black, with yellow crescents and spots on head and thorax; abdomen, except at tip, rufous. Length 0.50. Br. wings 0.96 inch.

♀.—Color black, the two basal joints of antennæ black, tipped with yellow, (remainder wanting. Klug says "antennæ luteous, the first article spotted with black"); two oval spots above ocelli, partly enclosed by two crescents, which join on the occiput, two lines extending downward on each outer edge of head to mandibles, two oval spots outside of antennæ, and a transverse line on clypeus, white; mandibles rufous,

palpi pale; tegulæ, a spot before and one beneath, V-spot, scutel, dot at base of metathorax and a spot on the pectus, before each of the coxæ straw-white; abdomen rufous, the apical segment above and a spot on the two apical segments beneath, black; legs at base black; ferruginous below, tips of the femora, tips of tibiæ and apical joints of tarsi blackish; tips of coxæ and a line on femora beneath, white; wings large, faintly smoky, stigma lengthened, not rounded, ferruginous.

Pennsylvania. (Coll. Am. Ent. Soc.)

A specimen from Massachusetts in the Harris Collection, varies in having these yellow dots above the antennæ and the legs below the knees, mostly black. The marginal dividing nervure nearly coincides with that below; the second brachial cross-nervure is wanting.

7. *Lyda variegata*, n. sp.

Black, antennæ luteous, head, thorax, and pleura with white spots, abdomen yellow red. Length 0.50. Br. wings 0.98 inch.

♀.—Black; large and stout; antennæ long (broken beyond 19th joint) third joint as long as 4th and 5th, color yellow, with the two basal joints, one-half the 3rd and all above the 10th black; head black, coarsely pitted, marked as in *L. tessellata*, viz: two oval spots above ocelli enclosed by two crescents, enlarged at both ends and joining a line on outer edge, extending to mandibles, an irregular spot on inner orbits, two smaller spots above antennæ and a cross line on labrum. white; edge of collar, V-spot, a spot on mesothorax on each side of scutel, a large irregular spot on pleura and a line behind, yellow-white; abdomen wholly reddish-yellow, wide at base; coxæ black, with a stripe above and spot beneath on the posterior pair; femora black, with a reddish line on each before; tibiæ and tarsi yellow-red; wings yellowish, stigma black, a faintly obscure spot beneath; marginal cross-nervure coinciding with that beneath, no Y in the costal space, but a shorter oblique cross-nervure, 2nd brachial with no inner cross-nervure.

Cordova, Mexico. One ♂. (H. de Saussure.)

This differs from *L. tessellata* in having the scutel black, a large whitish spot on pleura, the abdomen of one color &c.

8. *L. fasciata*.

Lyda fasciata, Norton, Proc. Ent. Soc. Phila., i. 1862, 200, ♀ ♂.

Black, thorax and abdomen spotted and banded with yellow; wings fasciate with black. Length 0.32. Br. wings 0.72 inch.

♂.—Black, antennæ 20-jointed, black, 1st and 3rd joints of equal length, the 3rd enlarged and as long as the two following; the head and the two basal joints of antennæ coarsely pitted; a minute dot over each eye, a spot from between antennæ to tip of clypeus, the middle of

mandibles and tip of palpi yellow; tegulæ, V-spot, scutel, a transverse line on base of metathorax, spots on the sides of the 3rd, 4th, 5th and 6th segments and the apex of tergum and four bands beneath on the same segments, yellow; legs yellow, varying to ferruginous, the coxæ, except at tip and a spot on the femora, black; a broad blackish band covers basal two-thirds of superior and most part of inferior wings; apex of wings hyaline, stigma large, rounded, black.

♂.—The male has no V-spot on mesothorax nor transverse line on metathorax, no yellow spot on 3rd segment of tergum and no black spots on femora. The basal joints of antennæ are yellow beneath.

Var. *α*. ♂.—No V-spot. The edge of fascia on wings is not clearly defined from the clear apex. The 2nd brachial has a complete cross-line.

United States (Smiths. Inst.).

Pennsylvania (Coll. Am. Ent. Soc.), New York, Connecticut, 4 ♂, 2 ♀.

The female has in one case four discoidal cells, the first submarginal receiving two recurrent nervures.

9. *L. plagiata*.

Lyda plagiata, Klug, Berl. Mag. ii, 1808, 278, Tab. 7, fig 6, ♀. Lepel. Mon. Tenth. 5, 11.

Pamphilus plagiatus, Latr., Encyc. No. 6.

Black; middle of tergum black. Length 0.44. Br. wings, 0.80 inch.

"Antennæ black; head luteo-testaceous, vertex black; thorax black, anterior part luteo-testaceous; abdomen black, excepting the base of tergum, which is pale testaceous. Legs luteous; wings fuscous."

"Baltimore, N. Am."

♂.—Antennæ 26-jointed, 3rd joint one-half longer than 4th; head of one color, except a black spot extending from ocelli to occiput within sutures; tegulæ and prothorax pale; legs pale, the coxæ and apex of hinder tibiæ black, tarsi fuscous; wings violaceous, semi-obscure, marginal cross-nervure not coinciding with that below; the 2nd brachial cell with cross-line, broken at bottom; a round obscure spot in the contraction of lanceolate cell.

Tennessee, (Smiths. Inst.); Pennsylvania, (Coll. Am. Ent. Soc.).
Two ♂.

10. *Lyda canadensis*, n. sp.

Color black; with slender orbital spots, mouth, tegulæ, scutels, pleura and venter straw yellow; a rufous band on tergum. Length 0.45; Br. wings 0.90 inch.

♂.—Antennæ black, sub-serrate, as long as to base of abdomen, slender, 22-jointed; 1st joint twice as long as 2nd, 3rd as long as 4th and 5th together, apical joint a little longer than the preceding; head

wide, extending back behind the eyes nearly as far as before, formed as in *L. plagiata* and *ochrocera*; margin of clypeus truncate, not rounded; a little protruded tooth on each side at the base of mandibles; nasus, base and outer side of mandibles, a slender spot from mandibles to eyes, a crescent shaped line extending from the inner summit of each eye over the back of head to neck, straw white; tegulæ, upper edge of anterior angle, scutel and postscutel, three spots on pleura, one over each of the coxæ, tip of anal segment, and the legs down the basal end of tibiæ, straw-white; tip of mandibles, a large spot covering most of the second, third and fourth segments of tergum and the legs below the knees, rufous or honey yellow; basal patches and first segment of tergum substrate laterally; wings faintly clouded; nervures brownish black.

11. *Lyda excavata*, n. sp.

Length 0.28. Br. wings, 0.62 inch.

♂.—Color black; the first and basal half of second joints of antennæ, face below ocelli, except a black line above each antenna, cheeks, tegulæ, spot on prothorax, scutel and postscutel, sides of basal plates, lower half of anterior angle, pleura, a spot above hinder coxæ, venter, legs behind the middle of femora, straw-white; a spot on the tip of the first and most of the second and third segments of tergum and the lower half of legs, yellow-red; antennæ slender, longer than thorax, setiform, the third joint as long as fourth and fifth. Head not unusually prolonged behind the eyes; a deep wide basin occupies the lower half of face, enclosing the antennæ, with a very irregular carina around all its borders, forming a sort of M above the antennæ and an inverted T below, on the nasus. A carina runs from between the antennæ down the nasus; wings as usual, hyaline, cross-nervure of third brachial nearly complete; claws stout.

Canada. Rev. L. Provancher.

12. *Lyda pallimacula*, n. sp.

Black, with yellow spots and crescents on head, thorax and pleura; abdomen rufescent. Length 0.44. Br. wings 0.90 inch.

♀.—Shining black; antennæ 26-jointed, the third more than one-half longer than fourth, the final joint longer than that preceding, the third, fourth and fifth joints slightly serrate and flattened, head rugose below ocelli, smooth above, and with the thorax, sparsely punctured; two oval spots above ocelli, enclosed by two crescents, enlarged at ends but not connected, which touch the occiput and eyes within the cheeks, edges of nasus and labrum, base of mandibles and palpi, yellow white; tegulæ, lower half of anterior angle, V-spot, scutel, post-scutel, line beneath.

ridges of metathorax, a broad transverse line on pleura from tegulæ to medial legs, spots above first and third pairs of legs, straw color; abdomen above reddish-brown, two or three basal segments at sides black; venter pale yellow, rufous toward apex; coxæ and femora yellow, the four anterior tibiæ and all the tarsi ferruginous; hinder tibiæ black; inner claw tooth large and so much on one side as to appear bifid; wings large, faintly clouded, nervures piceous, stigma darker, not lengthened, marginal cross-nervure not coinciding with that beneath; second brachial cell with nearly complete cross-nervure.

English River, 104° 58' N. L. H. B. T. (Smiths, Inst. R. Kennicott). One ♀. Farmington, Connecticut. Two ♀.

This seems allied to *L. tessellata*. The third joint of antennæ is about twice the length of the fourth.

13. *Lyda pacifica*, n. sp.

Length 0.30. Br. wings 0.62 inch.

♀.—Color black, the flagellum of antennæ rufous; nasus, basal half of mandibles and palpi, lower half of cheeks, a crescent from the inner summit of each eye to upper edge of head (where it widens), two inner arcs, one on each side of ocelli, tegulæ and edge of collar, summit of the two scutels, and the basal half of legs, straw-white; the abdomen, except the first and tip of final segment, and the legs below the tips of femora, rufous; claws black, cleft at tips; antennæ short, not extending to base of metathorax, about 21-jointed (tips broken off), third joint one-half longer than fourth; edge of nasus convex, mandibles with two inner teeth, the first very obtuse, the second prominent; body polished; wings, clear, apical one-third clouded.

California (San Francisco, April 1869, H. Edwards). One ♀.

Resembles *L. pallimacula*, but is smaller, the antennæ are much shorter, the second submarginal nervure joins the marginal nerve in this at some distance from the marginal cross-nervure.

14. *Lyda ocreata*.

Lyda ocreata, Say, Bost. Jour. i. 1835, 222, ♀.

Yellowish-green, antennæ and spots blackish. Length 0.36. Br. wings 0.76 inch.

♀.—Greenish-yellow, shining, head wider than thorax; eyes small, widely separated; head deep back of eyes; antennæ 28-jointed, blackish, lower half of basal joint pale, first joint three times as long as second; third not so long as first, scarcely longer than fourth; a spot on vertex enclosing ocelli and two lines in sutures from base of antennæ to occiput, black; head quite transparent, with three or four brownish crescents from outer orbits to back of head; labrum wide,

piceous; a transverse blackish line on neck, a spot on each side of collar near tegulæ, connected through the suture back of anterior lobe, a larger spot on each side of scutellum and spots on metathorax black; four brown spots on mesothorax, two on anterior lobe and one on each side lobe; tergum blackish at sides, paler in middle; legs yellowish; tips of femora, the tibiæ and tarsi brownish; wings hyaline, large, nervures obscure; stigma pale; marginal cross-nervure coinciding with second cross-nervure; third brachial cell with incomplete cross-nervure.

Canada, Mass., Conn, Ia. (Say.).

15. *Lyda luteicornis*, n. sp.

Black; the apex of antennæ, spots and crescents on head and thorax yellow, abdomen rufous. Length 0.40. Br. wings 0.76 inch.

♀.—Shining black; antennæ 28-jointed, black, the last 16 joints white; third joint one-half longer than fourth, head polished, with shallow punctures; two oval dots above ocelli, enclosed by two crescents, (touching summit and eyes, widened at ends, the lower bent away from the eyes and deeply cleft) two dots above antennæ, inner orbits up to crescent, cheeks, edge of clypeus, and mouth below, yellow; mandibles tipped with black, with a strong inner tooth; tegulæ and a spot beneath, V-spot, scutellum and a transverse line behind, pale yellow; abdomen rufous, paler in middle beneath; basal segment blackish; legs pale yellow, coxæ and apical three fourths of hinder tibiæ black; hinder tarsi ferruginous, claws apparently bifid; wings hyaline, costa blackish, second brachial cell with incomplete cross-nervure.

Farmington, Connecticut. Three ♀.

In one case the lower end of the crescent upon the face is enlarged into a square and not cleft.

16. *L. scripta*.

Tarpa scripta, Say, Long's 2nd Exp., ii, 1824, 312.

Lyda scripta, Harris Catalogue. Norton, Bost. Proc. viii, 223.

"Black, with white lines and spots; abdomen rufous." Length 0.44. Br. wings 0.92 inch.

"Hypostoma on its anterior margin, mandibles and palpi whitish; line upon the orbits extending from near the antennæ to the occiput and together with an insulated spot each side on the vertex, when viewed from behind presenting the form of the figure 3, white; a white slightly oblique spot above the base of each antenna; inferior orbits white: thorax with an abbreviated, transverse, angulated line before, slightly interrupted in the middle, a line before each wing and three small spots on the middle placed triangularly, white; wings hyaline.

nervures fuscous; feet yellowish-white; abdomen rufous, first segment, and sometimes the tip, black.

“North West Territory and Arkansa..”

Two imperfect specimens in the Harris Collection from New Hampshire, said to have been identified by Say, have the antennæ wanting so that I cannot be certain of the tribe. They have the ends of the third, above mentioned, on the face, split like a V; the hinder tibiæ and all the coxæ black, the claws apparently cleft of equal size, the teeth near each other, marginal cross nervure not coinciding with that beneath, second brachial cross-nervure incomplete.

17. *L. multisignata*.

Lyda multisignatus, Norton, Proc. Ent. Soc. Phil., iii. 1864, 15, 32.

Black; many yellow spots on head and thorax; abdomen rufous. Length 0.32. Br. wings 0.72 inch.

♀.—Shining black; antennæ 24-jointed, black, mandibles bidentate, one mandible with a small tooth between the others, which is wanting on the other; two lunate spots above ocelli, enclosed by larger crescents, which connect with a short inner orbital line, four oval parallel spots above antennæ, a large spot on cheeks, nasus (with two inner black dots) and mouth beneath, straw-white; tegulæ, collar, V-spot on anterior lobe, a triangular apot on each middle lobe of mesothorax at base and summit of scutel, straw white; abdomen yellow rufous; legs of three colors; coxæ and trochanters black, femora white, tibiæ and tarsi dark waxen; each of the four posterior tibiæ with two side spurs; wings slightly clouded at apex, third brachial cell with incomplete cross-nervure, marginal cross-nervure not connecting with that below.

Rocky Mts., Colorado. (Coll. Am. Ent. Soc.). One female.

18. *L. rufo-fasciata*.

Lyda rufifasciata, Harris Catalogue.

Black, with yellow spots and a rufous band on abdomen. Length 0.32. Br. wings 0.64 inch.

♀.—Black, antennæ black, 25-jointed, third joint one-half longer than fourth; two slender crescents from occiput to inner orbit opposite antennæ, an oval dot above antennæ on outer side, sometimes joined to crescent, two angular lines forming a diamond above antennæ, edge of nasus and mouth below, pale yellow; tegulæ, scutel and spot behind, yellow; a broad rufous band on abdomen, covering the second, third fourth and fifth segments; legs pale, almost white; coxæ black, tarsi ferruginous; hinder tibiæ blackish toward apex; wings hyaline, stigma, black, second brachial cell with incomplete cross-nervure.

New Hampshire. (Harris Coll.) Connecticut. Four specimens.

19. *L. semicincta*.

Lyda semicinctus, Norton, Proc. Ent. Soc. Phil. i. 1862, 144. ♀.

Color black, with white spots and bands on tergum. Length 3.04. Br. wings 0.74 inch.

♀.—Black; antennæ white, third joint hardly longer than fourth, apical half of the two basal articles blackish; orbits and back of head white, except at summit; two dots back of ocelli and one beneath; two interrupted lines from orbits to ocelli, nasus and tip of labrum. white; tegulæ. edge of collar, V-spot, scutellum and behind, edge of three apical segments and sides of tergum white; legs white; middle of femora and tips of tibiæ and tarsi black; wings faintly clouded, a smoky spot on upper pair below lanceolate cell.

Virginia. (Coll. Am. Ent. Soc.) One female.

20. *L. cavifrons*.

Lyda cavifrons, Cresson, Proc. Ent. Soc. Phil. iv. 1865, 246, 3. ♀.

"Black; face, mouth, outer orbits, tegulæ and legs pale luteous; wings fusco-hyaline; face concave. Length 4 lines. Br. wings 8 lines."

♀.—Shining black; head with a deep longitudinal furrow on each side of the ocelli; extending from the base of the antennæ to the occiput, connected by a cross furrow behind the ocelli; face concave, the margins prominent, subcarinate, with a longitudinal ridge in the middle of the clypeus; the face, two spots above the base of antennæ, clypeus, labrum, mandibles, palpi, lower inner orbits, the outer orbits, interrupted in the middle and extending on each side behind the eyes to the occiput, yellowish or pale luteous; antennæ dull black, 27-jointed, the scape beneath luteous, first joint stout, nearly four times longer than the second. Thorax polished; tegulæ and a spot before it, pale luteous. Wings ample, stained with pale fuscous, clearer at base, with a brassy and iridescent reflection; nervures black, pale at base, as well as the costal nervure; marginal dividing nervure not coinciding with the second submarginal nervure, the third brachial cell with an incomplete cross nervure; legs pale luteous; the coxæ and the trochanters except tips, black; tarsi dusky at tips; anterior tibiæ without side spur, each of the four posterior tibiæ with three side spurs. Abdomen shining black; the extreme lateral margins of the dorsal segments and the apical margins of the ventral segments pale luteous; extreme apical segment testaceous.

Colorado. (Coll. Am. Ent. Soc.) One female.

21. *Lyda inconspicua*, n. sp.

Black, legs luteous, wings hyaline. Length 0.32. Br. wings 0.56 inch.

♀.—Dull black; antennæ black, third joint one-half longer than fourth. (joints beyond the sixth wanting) head black, coarsely pitted,

mandibles yellow red; tegulæ testaceous; body black; legs yellow red, coxæ black, tarsi fuscous; wings hyaline, nervures and stigma blackish, second brachial cell with incomplete cross-line.

Pennsylvania (Smithsonian Inst.) One ♀.

Species not seen and position not assigned.

22. *L. circumcincta*.

Lyda circumcincta, Klug, Ber. Mag, ii. 1808, 279. Lepel. Mon. Tenth. 8, 21.

Pamphilus circumcinctus. Latr. Encyc. No. 10.

"Antennæ black; head and thorax black varied with white; abdomen black, broadly white at sides, beneath white or luteous; legs luteous, wings hyaline.

"Georgia."

Not seen. This is likely to be the same with *L. cavifrons* or *L. semicincta*. It only differs from the first in its white venter.

23. *L. amplecta*.

Lyda amplecta, Fab. Syst. Piez. 1804, 46. 16. Klug, Berl. Mag. ii. 1808, 282. Lepel. Mon. Tenth. 5, 9.

Pamphilus amplectus, Latr. Encyc. No. 3.

"Antennæ setaceous black, head luteous, with a broad black line on vertex; thorax blue-black, dotted with yellow on each side before; abdomen blue-black, depressed, smooth; legs luteous; wings hyaline and as in others of this genus, enclosing the body.

"Carolina."

Much like *L. plagiata*, Fabr.

Sub-family 5, CEPHIDES, Westw.

Antennæ multi-articulate, 21—28-jointed, clavate or filiform; labrum divided into three elongated lobes; labial palpi 4-jointed, maxillæ bilobed, outer lobes largest, pilose; maxillary palpi 6-jointed, the four basal joints gradually increasing in length, the fifth very minute, the sixth as long as the third. The neck is elongated and the anterior tibiæ have but one spur as in the Uroceridæ. The ovipositor is not exerted and consists of two compressed plates, nearly straight and serrated, but formed as in the true saw flies, defended by two external 2-jointed sheaths. (Westw. Mod. Class, ii, 110.)

CEPHUS,* Latr.

Trachelus, Jurine, Hym. 1807, 70.

Astatus, Jurine, Hym. 1807, 60.

Wings with two marginal cells (the first small) and four submargi-

* Hartig includes *Cephus* in Uroceridæ, from the single anterior tibial spur, form of saws and form of collar. Curtis and Westwood place it among the Tenthredinidæ, from the form of its labium, elongated palpi, spurred posterior tibiæ and form of its larva particularly in relation to *Lyda*.

nal cells, the second and third each with a recurrent nervure. *Antennæ* about 21-jointed, toward the apex sub-clavate. *Anterior tibiæ* with one apical spur; middle tibiæ with one, hinder tibiæ with two side spurs; the tarsi have little membranous plates beneath. The abdomen is more or less compressed, somewhat as in *Ophion*.

The larva is fleshy, with a scaly head and six minute thoracic legs; the apical segment is attenuated and terminated by two minute points, with a conical lobe on each side.

Their habits are not much known; Mr. Westwood notes one species which deposits its eggs in the young stems of the pear, spirally, the larva feeding within the shoots; another species resides in the stems of wheat and occasionally commits much injury. Curtis refers to a species (*C. abdominalis*) which lives upon the flowering buds of fruit trees. But few species, which are rare, are as yet known in this country.

1. *C. abbreviatus*.

Cephus abbreviatus, Say, Long's. 2nd Exp. ii. 1824, 314, 2, ♀.

Black, abdomen rufous, at base. Length 0.28 inch.

♀.—“Body black, polished; labrum white, with a dilated, longitudinal, fuscous line; thorax with an oblique, white, abbreviated line at the base of the superior wings; scutellum with a transverse, white line; mesothorax with a longitudinal white spot; wings hyaline, nervures fuscous; the small nervure which divides the first submarginal cellule is abbreviated and does not reach the margin; feet pale rufous; tibiæ with a white abbreviated line on the exterior side near the knees; posterior tibiæ and tarsi black; abdomen compressed, acutely edged above, beyond the middle; first and second segments rufous.”

“Pennsylvania.”

Not seen. Mr. Walsh writes me that the antennæ of *Cephus abbreviatus* are 29-jointed, the last joints subequal. Probably a *Phyllæcus*.

2. *C. heteropterus*.

Cephus heteropterus, Harris, Catalogue. Norton, Bost. Proc. viii, 1861, 224, 1, ♀. Length, 0.30. Br. wings 0.60 inch.

♂.—Resembles *C. abbreviatus*, except that the basal segments of the abdomen are obscure ferruginous above, and rufous beneath. There are two pale dots on the mesothorax and all the legs are pale honey yellow, posterior tarsi blackish. The small marginal areolet of upper wing is either wanting or incomplete.

Massachusetts, New Hampshire, (Harris' Coll.).

This is probably the male of *C. abbreviatus*.

3. *C. mexicanus*.

Cephus mexicanus, Guér. Icon. Reg. Anim, iii, 403.

"Black; mandibles having a large longitudinal yellow spot in middle of their length; two very small yellow spots in the middle of their front, below the antennæ; more spots of the same color on the border of the eyes near their superior border and on the sides of the head, behind the eyes. There are two yellow spots upon the scutellum; the exterior side of the posterior haunches is yellow, and the knees and the tarsi are of a yellowish brown. Wings transparent, lightly smoky toward the extremity and the nervures brown. Abdomen black, with the second, third, and fifth segments largely bordered with yellow above; this band indented anteriorly and interrupted in the middle (female). Long. 15. Br. wings 22 mill.

"Mexico.

"This species is of the size of *C. latyrus*, and resembles it very much."

61. *JANUS*, Steph.

Janus, Stephens, Brit. Ent. Mand. vii. 1835, 107.

Cephus, Curtis.

Wings as in *Cephus*; areolets of different shape. *Antennæ* multi-articulate, filiform. *Abdomen* short, narrow at the base and dilated at the tip, which is obtuse and rounded in the males, slightly compressed and acute in the females.

Stephens founds the difference between this and *Cephus*, on the long filiform antennæ, the difference in the structure of trophi, and in the areolets of wings and the abbreviated subclavate abdomen.

1. *J. flaviventris*.

Janus flaviventris, Fitch, 7th Rep. Nox. Ins. No. 12.

"Shining black, hind body yellow except at its base, its mouth being straw colored and also the hind margin of its collar, the base of its wings, a small spot above their sockets and the fore and hind margins of the metathorax. The hind body is narrower than the fore body and more narrow and long than in the typical species of this genus, forming almost two-thirds of the length of the insect. Its basal segment is black, edged anteriorly with straw yellow and with a slender line of this color along its middle, ending in a large triangular spot. The second segment is also black at its hinder end and on the sides is a blackish cloud on the sutures of each of the remaining segments. The wings are hyaline and glassy, their stigma sooty brown, which color extends inward occupying most of the anterior marginal cell. A faint smoky cloud may also be perceived near the middle of the poste-

rior apical cell and another along the margin of the anterior one. The hind feet are dusky."

New York. Not seen.

62. *PHYLLÆCUS*, Newm.

Phyllæcus, Newm. Westw. Mod. Class. ii. 1840, 111. App. 55.

Antennæ slightly thickened beyond the middle, 27-or 28-jointed; filiform. Remainder as in *Cephus*.

2.—Final joint of maxillary palpi inserted at the end of preceding joint. *Antennæ* subclavate beyond the ninth joint.

1. *Phyllæcus clavata*, n. sp.

Black, with two bands on the tergum and the apex, yellow. Length 0.36—40 inch; br. wings 0.74—80 inch.

♀.—*Antennæ* as long as to second segment of abdomen, slender as far as ninth joint, beyond which they are subclavate and the joints as wide as long; first and second joints globose. Final joint of maxillary palpi inserted into the end of that preceding. Head quite concave behind. Prothorax concave before, somewhat depressed, nearly angulate at corners, its anterior margin upturned; surface of head and thorax rather dull; mesothorax with scattered punctures; abdomen deeper than wide, rugose, almost shagreened at sides toward the end. Spur of anterior tibiæ short and stout. Inner claw tooth stout. Color black, a spot beneath the upper wings, the second, third, fifth, sides of sixth and tip and sides of apical segments of tergum and tip of second ventral segment, yellow; legs black, with all the femora below their basal third and the four anterior tibiæ yellow; the four anterior tarsi yellow red. Wings smoky hyaline, nervures brown, costal margin yellow. First marginal cell one-third wider at stigma. Lanceolate cell with straight cross nervure. Lanceolate cell about one-half as long as the brachial cell above, the bounding nerve of which does not coincide with the recurrent nervure above.

Var.—A yellow spot on the mandibles; hinder tibiæ obscurely yellow above.

San Francisco, California, (H. Edwards), April and May 1869, 3 ♀.

b.—Final joint of maxillary palpi inserted upon the side of preceding joint.

1.—*Antennæ* subclavate beyond the 5th joint.

2. *P. trimaculatus*.

Cephus trimaculatus, Say, Long's 2nd. Exp. ii. 1824, 313. 1. ♀ ♂.

"Black; abdomen with a yellowish white spot on each side at the middle." Length, 0.50—60. Br. wings 0.84—92 inch.

♀.—Shining black; *antennæ* 27-jointed, filiform, thickened in middle, "orbits before, two longitudinal spots on the hypostoma and base of the mandibles yellowish white; wings brown black; meta-

thorax with a pale membranaceous, triangular spot behind; abdomen on the middle with a transverse oval, pale yellow spot on each side," on fourth segment.

"Var *a*.—Head immaculate."

"Var *b*.—A very small indistinct spot on each side beyond the middle"

Ct., Penn., N. Y., Mass., Fla.

In the specimens examined, I find a dot (in one case two dots) on each side at summit of orbit within and an oval dot on inner orbits below antennæ. In a specimen from Florida, two oval dots below antennæ. The apical joint of labial palpi is long and large, pear shaped.

The apical joint of maxillary palpi, as in all the succeeding species, is inserted on the side, near the middle of preceding joint. First marginal cell one-half widest at stigma. Lanceolate cell of under wing about one-half the length of brachial cell above. A single male has the antennæ quite short, an oval white spot on the side of third segment and a more slender one at apex on each side of fifth. The anterior tibiæ and the basal third of intermediate pair are white; wings of different specimens vary from subhyaline with clouded tips to obscure blackish.

2.—*Antennæ filiform, scarcely clavate.*

3. *P. integer.*

Cephus integer, Harris Catalogue, ♀. Norton, Bost. Proc. viii, 1861, 224, 2, ♀ ♂.

Cephus filicornis, Harris Catalogue, ♂.

Black; collar white; a rufous band on abdomen. Length 0.32. Br. wings, 0.62 inch.

♀.—Shining black; antennæ (28-jointed as long as to 2nd segment of tergum), black, filiform; mandibles and palpi yellow, the former strongly bidentate, with a small inner tooth between; tegulæ, wide edge of collar connecting tegulæ and lower edge of metathorax white; the three basal segments of abdomen rufous; legs pale rufous; posterior tibiæ and tarsi blackish, basal third of the tibiæ white, claws bifid; wings hyaline, a fuscous spot beneath stigma on its marginal cell; costa yellowish; first marginal cell shorter than wide, both the nervures received in stigma. Lanceolate cell of underwing nearly as long as that above.

Massachusetts, New York.

4. *P. bimaculatus*, n. sp.

Black, the four basal segments of tergum venter and legs, yellow red; wings clear with two black apical spots. Length 0.37 inch; br. wings 0.65 inch.

♀.—Antennæ filiform, about 24-jointed, joints beyond the fifth as wide as long. Head and thorax polished, the latter delicately punctured. Head slightly concave behind. Final joint of maxillary palpi

inserted on the side below the middle of preceding joint. Prothorax narrowed before, sloping down to neck, its margin slightly rimmed. Color black; a large spot on mandibles, palpi, hinder edge of prothorax, a stripe along the pleura, a spot on coxæ and the trochanters, straw-white; the four basal segments of abdomen, coxæ and legs below trochanters, yellow red; wings iridescent, perfectly clear, with a large round black spot at the outer end of fourth submarginal cell and a smaller round spot in middle of outer discoidal cell; first marginal cell not wide at stigma. Lanceolate cell of under wing more than two thirds the length of that above, the bounding nerve of brachial cell above not coinciding with recurrent nervure above, but received in discoidal cell.

♂.—The male has the antennæ ferruginous beneath. The four basal segments of tergum are mostly black above. The inner nerve of first marginal cell is broken near stigma.

Farmington, Conn, June. 1 ♀, 3 ♂.

Sub-family 6. XYELIDES, Westw.

Xyelides, Westw. Mod. Class. ii. 1840, App. 55.

Xyelides, Halliday.

Antennæ about 13-jointed, the third joint very much elongated; ovipositor exerted, nearly as long as the abdomen.

63. XYLEA, Dalm.

Xylea, Dalmann, Ins. Nov. Gen. Stockholm, 1819.

Analecta Ent. " 1823, p. 27.

Pinicola, Latr. Dict. d'Hist. Nat. 2nd Edition.

Mastigocerus, Klug.

Wings with three marginal cells, the first smallest, and four sub-marginals, the second and third each with a recurrent nervure; three discoidal cells; the second brachial small, pentagonal; the lanceolate cell with oblique cross line, under wings with two middle cells. *Antennæ* nine to 12-jointed, the third very long. *Clypeus* whole, labrum in form of a long crescent, entire; mandibles unequal, three and four toothed; maxillary palpi, 7-jointed (Hartig 6-jointed! Westw.), elongated and elbowed, the fourth joint being terminated by three minute, fleshy joints; labium 3-lobed, labial palpi 3-jointed. *Ovipositor* exerted, nearly as long as body, enclosed by two compressed pilose sheaths. It is membranous; of two plates (Westwood, Mod. Class ii. 111, from which he argues its agreement with *Tenthredinidæ*) slightly serrated. *Anterior tibiæ* with two apical spurs; *hinder tibiæ* with two side spurs (Westwood), three side spurs, Hartig.

Larvæ little known. Latreille states that they live "in the interior of vegetables or in old wood."

A.—Antennæ 9-jointed; third submarginal cell with two recurrent nervures.

1. *X. ferruginea*.

Xyela ferruginea, Say, Long's 2nd. Exp. ii. 1824, 310.

"Ferruginous; thoracic spots and base of the abdomen blackish. Length to tip of oviduct seven-twentieths of an inch.

"Antennæ fuscous, basal joint ferruginous; above the antennæ and extending between the eyes is a transverse black spot; thorax each side above the base of the superior wings with a longitudinal blackish spot, connected behind with a transverse, almost indefinite one; metathorax blackish behind; wings hyaline, slightly tinged with yellowish; nervures brown; tergum, the three basal segments black, remaining segments obsoletely blackish on their posterior margins; posterior pairs of the tibiæ 6-spined, one pair on the middle, one pair beyond the middle, and one at tip.

"Arkansa."

Not seen. The neuration of this and the three following species differs from that of European species, and as Mr. Say remarks, will warrant a separation into another section. "The first radial (marginal) cell receives one recurrent nervure, the second none and the third two. The first is nearly square, slightly oblong, nearly two-thirds the size of the second, which receives no recurrent nervure and is somewhat smaller than the third, which receives two. The maxillary palpi are much shorter than in the Swedish genus.

2. *X. tricolor*.

Xyela tricolor, Norton. Proc. Ent. Soc. Phil. i. 1862, 144, ♂.

Color steel blue, rufous and black. Length 0.30. Br. wings 0.72 inch.

♂.—Antennæ black, 9-jointed, body steel blue; spots at insertion of antennæ, nasus, labrum, mandibles, palpi and edges of ventral segments, white; nasus edged with black, emarginate; mandibles tridentate, inner edge rufous; legs rufous; tips of posterior femora, the tibiæ and tarsi black; intermediate tibiæ with five, posterior with six spurs; wings hyaline, stigma black, nervures as in *X. infuscata* except the costal space, which is widened and divided by a slender longitudinal nerve, which opens into a Y near the stigma. The underwings have three inner cells, two of which are submarginal.

Kansas. One specimen (Coll. Am. Ent. Soc.).

3. *X. infuscata*.

Xyela infuscata, Harris Catalogue. Norton, Bost. Proc. viii. 1861, 224, ♂.

Fuscous brown, venter and legs reddish yellow. Length 0.24. Br. wings 0.52 inch.

♂.—Fuscous brown, almost black; antennæ black, basal joint almost covered with pale hair; nasus, labrum, base of mandibles, tegulæ, most of abdomen beneath and the legs, dull reddish yellow; posterior tarsi blackish; five spurs on each of the four hinder tibiæ; wings smoky hyaline, cells as in *X. ferruginea*; lanceolate cell large, with oblique cross-line; hinder wings with three inner cells, two submarginal and one beneath.

Massachusetts (Harris Coll.). One ♂.

B.—Antennæ 12-jointed; second and third submarginal cell, each with a recurrent nervure.

4. *Xyela minor*, n. sp.

Blackish piceous, with ferruginous venter and legs, wings very large. Length 0.10, with ovipositor 0.14. Br. wings 0.32 inch.

♀.—Color, variable shades of piceous; antennæ 12-articulate, the third joint nearly as long as remainder of flagellum, the remaining nine articles covered with coarse spiky hair; head and thorax shining, cancellate, mandibles 3-toothed, the teeth much smaller on one of them; mouth and anterior part of scutel white, a spot about ocelli, a line on occiput on each side of ocelli and two others (sometimes obsolete) running from outer ocelli to antennæ and spots on back of head, brownish black; a wide dark line on each side lobe of mesothorax; two slender ones along sutures and another above scutel; tergum more or less black, body beneath pale, legs yellowish; four hinder tibiæ with five spurs; wings faintly clouded, nervures and stigma yellowish, cells as in previous species, but two inner cells in underwings.

Washington, D. C. (Baron Osten Sacken); Pennsylvania, (Smiths. Inst.). Mass. (Coll. Am. Ent. Soc.) 6 ♀.

In one specimen, on one wing the second and third submarginal cells each receives a recurrent nervure as in the European species, while on the other wing the third submarginal receives both nervures.

—o—

Family UROCERIDÆ, Leach.

Abdomen in its whole width soldered to the breast.

Ovipositor filiform, exserted, long, inclosed in a groove beneath the abdomen or arising from a deep cleft beneath the sixth segment and extending backward beyond the apex of the abdomen.

Anterior tibiæ with one spur.

Prothorax and *collar* elongate.

Labrum entire, not lobate; *maxillary palpi* long and 5-jointed or short with one or two joints; *labial palpi* short, with one to four joints.

Larvæ—wood-eaters. The eggs are deposited in holes bored in trees or bushes, and the pupæ undergo their transformation within the wood.

1. *ORYSSUS*, Fabr.

Oryssus, Fabr. Suppl. 1798; Syst. Piez. 47.

Sirex Fabr. Ent. Syst. 1775.

Sphex, Scopoli, Ent. Car. 1763.

Wings with one marginal and two submarginal cells, the first with two recurrent nervures; lanceolate cell closed; under wings without inner cell.

Antennæ inserted at the nasus, 10-jointed in female, 11-jointed in male, (Hartig says: ♀ 11-jointed, ♂, 12-jointed); the third and sixth longest, the joint before the last thickened.

Head large, rounded, wider than thorax. *Mandibles* short; *labrum* entire, with two slight lateral impressions; *maxillary palpi* long, 5-jointed, *labial palpi* 3-jointed.

Ovipositor concealed in a groove beneath, springing from the last segment, long and very slender.

It is ordinarily concealed in a channel beneath the abdomen, but is capable of being extended, for which purpose it can be curved at the base. The *terebra* is formed like that of *Urocerus*.

The anterior lobe of the mesothorax is wide and extended back to the scutellum, while the side lobes are very small. The scutellum is widened and large.

Anterior tibiæ with one end spur, simple in the males, dilated and incised in females. *Tarsi* 5-jointed in males, 3-jointed in females.

Little is known of the larva. Latreille and Klug suppose that they subsist upon the wood of standing trees. Scopoli found them upon fir-trees and Latreille upon old house beams.

Westwood has separated this genus into a subfamily *Oryssides*, following Dahlbom, who named it *Oryssini*, and Halliday *Oryssidæ*.

1. *O. hæmorrhoidalis*.

Oryssus hæmorrhoidalis, Harris, Cat. and Inj. Ins. 1835, ♀.

Oryssus terminalis, Newman, Ent. Mag. v. 486.

“Black, rough before and smooth behind, with the three last segments of a blood-red color; the outer side of the fourth and fifth joints of her antennæ, her knees and a line on the outer edge of her shins are white; her feet are dull red. Her wings are clear and transparent, with a broad, smoky-brown, transverse band beyond the middle of the

first pair. Her body measures nearly six-tenths of an inch in length."

"Massachusetts." Not seen.

2. *O. maurus*.

Oryssus maurus, Harris, Cat. and Inj. Ins. 1835, ♀.

Oryssus Sayi, Westwood, Zool. Jour. 1835, 440.

"It is of a deep black color, rough before and smooth behind and is marked with white on the antennæ and legs, like *O. hemorrhoidalis*, with the addition of two short white lines on the forehead, between the lower corners of the eyes. The feet are black. The wings have a smoky band beyond middle which, however, fades away toward the inner margin. They measure four to five-tenths of an inch in length."

"Massachusetts." Not seen.

3. *O. affinis*.

Oryssus affinis, Harris, Cat. and Inj. Ins. 1835, ♂.

"♂.—Differs from *O. maurus* in having reddish feet, and in wanting the two white spots on the forehead. It measures four-tenths of an inch in length."

"Massachusetts."

Dr. Harris thinks that this may be the male of *O. maurus*.

2. *DERECYRTA*, Smith.

Derecyrta, Smith, Am. Mag. Nat. Hist. iv. 1860, 255.

Wings with one marginal, elongate, appendiculate, and four sub-marginals, the first small, second oblong, widest at apex, third subquadrate, fourth extending to the apex of wing, the second and third each with a recurrent nervure, a little within, near their base.

Antennæ setaceous, 23-jointed, the third joint one-half the length of the scape, the fourth as long as the scape, five following joints as long as the third, remainder gradually diminishing in length.

Head subglobose, vertex convex, ocelli prominent, in a triangle between the eyes.

Thorax as wide as the head, oblong, the sides parallel; the prothorax narrowed before into a short neck; scutellum elevated.

Abdomen cylindrical, about twice the length of head and thorax; the ovipositor short and slightly exserted.

Tibiæ bispinose at their apex.

1. *D. pictipennis*.

Derecyrta pictipennis, Smith, Ann. Mag. Nat. Hist. iv. 1860, 255.

Ega, Brazil.

3. **XYPHYDRIA**, Latr.

Xiphydria, Latr. Dict. d'Hist. Nat. 1802.

Hybonatus, Klug, Mon. Sir. Germ. 1803.

Urocerus, Jurine, Nouv. Meth. 1807.

Astutus, Panz.

Sirex, Spec. Linn. Fabr. Rossi. DeVill, Lesk, &c.

Ichneumon, Linn.

Wings large, with two marginal and four submarginal cells, the first second and third each with a recurrent nervure; lanceolate cell with oblique cross-line. Under wings with two middle cells.

Antennæ as usual in position, setaceous, 17—22-articulate, first and third longest, terminal joints indistinct.

Head large, orbicular, mandibles broad, with two strong inner teeth, maxillæ terminated by two lobes, maxillary palpi long, 5-jointed, the three terminal joints short; labial palpi stronger than maxillary, 3-jointed (Westwood), (4-jointed, Hartig).

Prothorax elongated into a neck, the collar elevated; thorax broader than the head; ovipositor exerted, extending beyond body, sub-serrate, formed as in *Urocerus*.

Legs slender, anterior pair longest, their tibiæ with one enlarged curved spur, the four basal tarsal joints with two small pulvillæ beneath.

Larva with six small exarticulate thoracic legs, and a horny point at tail.

The larva of *X. dromedarius* is stated by Westwood to be found in willow trees.

Writers differ as to the position of this genus, some placing it with the Tenthredinidæ as a terminal section, leading to Uroceridæ; others in a sub-family, *Xyphidriadæ*, (*Xyela* and *Xiphydria*, Steph.), but Lepel., Westwood and Hartig place it with *Urocerus*, where it seems to belong.

1. **X. albicornis**.

Sirex albicornis, Harris, Catalogue, 1835.

Xiphydria albicornis, Harris, Inj. Ins., 1841, 2nd. Ed. 428.

Black; flagellum of antennæ, spots on head and thorax and six spots on each side of abdomen, white. Length 0.56, with ovipositor 0.62. Br. wings 0.88 inch.

♀.—Shining black; antennæ 18-jointed, white, the two basal joints and tip of apical joint black; head rugose below ocelli, smooth on occiput; thorax rugose, a smooth stripe in middle of each side lobe of mesothorax; terminal joint of labial palpi much enlarged and truncate, thorax abrupt, rounded before; abdomen polished, basal segments roughened; four parallel stripes, the inner two largest, from ocelli to

back of head, two bands (not connected) from mandibles outside of orbits and continued upward on inner orbit to above antennæ and two inner oval dots above base of antennæ, yellow white; mandibles and palpi ferruginous; tegulæ, broad edges of anterior angle (with a brown spot in centre) a slender line on prothorax back of neck, a dot on each side of scutel before, two spots on neck beneath, a dot on middle of pleura, six spots on the sides of the six basal segments of abdomen and a minute apical dot near ovipositor, white; legs dark reddish yellow, tarsi blackish; wings hyaline; apical half faintly clouded, a small obscure spot on upper wings beyond lanceolate cell; under wings with two middle cells.

Conn., Mass., N. Y. August.

A specimen from Canada has but two white lines on vertex, no dot on apical segment of abdomen and the lower middle cell of under wings with incomplete cross nervure, (Coll. Am. Ent. Soc.).

Dr. Harris, states that they are found on the trunks of trees of soft wood, in August.

2. *X. maculata*.

Xiphydria maculata, Say, Bost. Jour. i. 1835, 221, ♂.

"Abdomen black, with seven lateral white spots. Length over two-fifths of an inch."

"♂.—Black; head punctured on the front; with two small spots above the antennæ; anterior and inferior orbits extending in a line behind the eye, base of the mandibles and two lines upon the vertex, white; thorax confluent punctured; about four short white line upon the disk; a white spot before the wings, wings immaculate; tergum with seven lateral, emarginate white dots; beneath, on the neck and pectus with a few white spots; feet honey yellow."

This is probably the male of *X. albicornis*. A specimen from Rev. L. Provancher, Canada, has the antennæ 19-jointed; all but the basal and apical joints whitish on the basal half; thorax coriaceous; scutel large, triangular, the angles acute, with side-edges sharp, hinder angle nearly bidentate; the inner orbital line terminating at about the middle of eye; a white dot at summit of each eye; no white lines on mesothorax; seven lateral spots on tergum.

3. *X. tibialis*.

Xiphydria tibialis, Say, Long's, 2nd. Exp. ii. 1824, 312, 2.

Xiphydria mellipes, Harris, Cat. 1835. Inj. Ins. 2nd. Ed. 429.

"Black, four lateral spots of the abdomen, first tarsal joints and base of the tibiæ, white. Length more than two-fifths of an inch.

Stethidium rough with confluent punctures, immaculate; wings hyaline, nervures dark fuscous; feet black; tibiæ white, fuscous at

tip; tarsi, first joint white; abdomen black, three middle segments and the penultimate segment, each with a white spot on each side."

Pennsylvania.

Dr. Harris in mentioning his *X. mellipes* only states that it differs chiefly from *X. albicornis* in having only four white spots on each side of the abdomen. It is four-tenths of an inch long.

4. *X. basalis*.

Xiphydria basalis, Say, Bost. Jour. i. 1835, 222, 2.

"Black; abdomen fasciate at base. Length seven-twentieths of an inch.

"♀.—Body black, polished; mandibles and palpi white; thorax, anterior segments glaucous on the posterior margin; wings hyaline, first cubital cellule confluent with the first radial, having only a rudiment of the dividing nervure; abdomen, the two basal segments honey yellow, more or less intermixed with black; feet honey yellow; posterior tibiae and tarsi black, the former white at base."

Indiana. Not seen.

5. *X. abdominalis*.

Xiphydria abdominalis, Say, Long's, 2nd. Exp. ii. 1824, 311, 1.

Black, abdomen rufous. Length more than half an inch.

"Head confluent punctured, antennæ short; vertex with two distant, longitudinal yellow spots back of antennæ, and another transverse one on each cheek above, from summit to mandibles or on outer orbit; thorax confluent punctured, margined, and with three longitudinal impressed lines, distant before; wings fuliginous; abdomen bright rufous, first segment above blackish; feet piceous black."

Pennsylvania. Not seen. Sex not given. ♀ in collection of Mr. Stephen Calverley.

6. *X. attenuatus*.

Xiphydria attenuatus, Norton, Proc. Ent. Soc. Phil. i. 1862, 144 ♂.

Color pale honey-yellow; body very slender. ♂, Long. 0.26. Br. wings 0.46 inch.

♂.—Pale honey-yellow, antennæ 16-jointed, blackish, two or three basal articles yellowish; a spot inclosing ocelli, tip of mandibles, sides of neck, of meso- and metathorax blackish, tergum irregularly dark, pectus brown piceous; body beneath and legs whitish; wings hyaline, nervures and stigma pale; under wings with two middle cells.

Pennsylvania. (Coll. Am. Ent. Soc.) Four specimens.

4. *UROCERUS*, Geoffr.

Urocetus, Geoffroy, Hist. des Ins. 1762.

Sirez, Linn. Syst. Nat. 12th Ed. 1766.

Ichneumon, Linn.

Wings with two marginal and four submarginal cells, the first small,

ovate, the lower end pointed, the second and third each with a recurrent nervure; a broad lanceolate cell with oblique cross line; under wings with two inner cells.

Antennæ setaceous, as long or longer than thorax, from 17—25-jointed, first and third longest.

Head moderate, semiglobose, generally narrower than thorax, eyes somewhat kidney shaped; labrum minute, elongate; maxillæ with two lengthened setose lobes, palpi 1-jointed; labrum produced, its palpi 3-jointed.

The *prothorax* is produced into a short neck, the collar wide, abruptly elevated and angulate before. The *metathorax* is of two parts, the hinder portion of which has been regarded by some as the basal segment of abdomen. The *abdomen* long, wide, generally a little thickened toward end, terminating in an elongate point or horn; in the female also with an ovipositor coming from beneath the sixth segment and extending beyond the apex of abdomen. The borer which is inclosed between two horny sheaths, is hollow and nearly cylindrical, with lateral grooves and with a separate piece in its lower side, composed of smaller pieces so arranged as to assist the upper part both as a support and an addition of power. This apparatus has sufficient strength to enable the female to deposit the eggs at some depth in solid timber. It is described and figured fully by Westwood, Hartig and others.

Westwood shows an analogy between the saws of the Tenthredinidæ and the borers of *Urocerus*, their general principle being alike, only one is fitted for depositing eggs in tender leaves and stems and the other in solid wood.

The larvæ are long, cylindrical, fleshy grubs, six footed, the terminal segment furnished with a short spine. These larvæ bore large holes within the trees, often causing great destruction, especially in pine forests. Mr. Westwood quotes the following statement:

Mr. Raddon forwarded to the Entomological Society specimens of *U. Juvenus*, accompanied by specimens of the wood of a fir tree from Beadley Forest, Worcestershire, perforated by this insect. Of this tree, twenty feet were so intersected by the burrows, that it was fit for nothing but firewood; and being placed in an out house, the perfect insects came out every morning, five, six, or more each day. The females averaged one in twelve for the first six weeks, but afterwards became more plentiful and continued to make their appearance until the end of November, females only being produced during the last two or three weeks. (Trans. Ent. Soc. Vol. i, 85, App.)

When full grown, the larvæ are said to form a slender silken cocoon mixed with chips at the end of their burrows. The pupa greatly re-

sembles the imago, having the limbs laid along the side of the body and breast. When the transformation of the insect take place in the summer the imago is produced in the space of a month, but if the larvæ are not full grown until autumn, the fly does not appear until the following summer.

These insects are among the largest of the order and from their powerful flight, range over a wide extent of country, some of our species being found both on the Atlantic and Pacific coasts. As the larvæ remain a long time in the wood many of our species have been exported in timber and are now common in Europe.

The sexes vary much in color and size and it is difficult to decide which belong to the same species, unless they are taken together.

Much of interest about the structure of habits of European species may be found in the writings of Klug, Dahlbom, Westwood, Hartig, &c.

Table to assist in determining species.

A. Ovipositor not longer than the whole of abdomen :

1. Antennæ of one color :

a. Apical cornus of ♀ triangular, not spear-shaped :

Legs black, abdomen black.....1. *Edwardsii*.

4. *areolatus*.

Legs black, abdomen yellow banded.....2. *zonatus*.

Legs rufous, abdomen cyaneus.....3. *cyaneus*.

Legs rufous, abdomen banded.....5. *nigricornis*.

2. Antennæ banded with white or yellow :

b. Apical cornus spear-shaped :

Base of all the tibiæ yellow.....6. *albicornis*.

7. *abdominalis*.

9. *tricolor*.

Base of hinder tibiæ yellow.....8. *Cressoni*.

All the tibiæ and tarsi yellow.....10. *flavicornis*.

B. Ovipositor longer than the whole body.....11. *caudatus*.

A. *Ovipositor not longer than the whole of abdomen.*

A.—Apical cornus of abdomen in female not spear-shaped.

1. *U. Edwardsii*.

Sirex Edwardsii, Brullè, Hist. Nat. Hym. iv, 645, Pl. 45, fig. 1, ♀.

Cyaneus; wings subviolaceous. Largest specimen, Length 1.32, with ovip. 1.44. Br. wings 2.20 inch. Smallest specimen, Length 0.56, with ovip. 0.62. Br. wings 0.96 inch.

Steel-blue, antennæ, 20-, 22-, 23-, 25-jointed (in different specimens) the first and third joints of equal length; head below vertex coarsely pitted, vertex punctured and shining; thorax closely pitted at sides, with a velvety appearance; segments of abdomen velvety, very finely punctured in middle; anal horn shining, coarsely punctured and serrate, its form short, almost triangular; ovipositor the length

of abdomen without cornus; legs sparsely punctured; tint of head and thorax greenish blue, of the abdomen steel blue, sometimes purple; hinder legs purple; anterior legs below knees dark ferruginous; femora short, hinder tibiæ lengthened; first joint of their tarsi more than one-half the length of the tibiæ, the tarsi somewhat flattened; claws large, with a strong inner tooth, removed from the tip; wings shining sub-violaceous, darkest at base and along upper margin; second brachial cell with incomplete cross nervure.

Var.—Most part of legs below the knees ferruginous.

N. Y., Kansas, Chilyunk Depot, Wash. Terr.; Pac. R. R. Survey, 38 N. Lat. (Smiths. Inst.).

In some cases the second marginal cell is open at the outer end, the nerves being obsolete. A specimen from Washington Territory has the wings almost hyaline.

In all the succeeding species, the punctures are as above unless otherwise mentioned.

2. *Urocerus zonatus*, n. sp.

Cyaneous, with a yellowish red band on the fifth and sixth segments of abdomen, wings yellow hyaline. Length 0.48—1.00. Br. wings 0.84—1.76 inch.

♂.—Color steel-blue with a greenish tint on head and thorax, antennæ 19—21-jointed, black, the third, fourth and fifth joints rufous; a yellow red band on the fifth and most of the sixth segments of abdomen, the other segments with a violet hue, the cornus dark ferruginous, short, shouldered in middle, at apex suddenly compressed and acute; the four anterior legs yellow red below middle of femora, blue above; posterior pair dark ferruginous, the tibiæ and tarsi much flattened; tibiæ fluted, claws as in *U. Edwardsii*; wings hyaline, all the margins clouded with yellowish, nervures ferruginous; second brachial cell with incomplete cross line.

New York, Maryland. (J. Akhurst, T. Glover.)

Six specimens. This seems likely to be the male of *U. Edwardsii*.

3. *U. cyaneus*.

Sirex cyaneus, Fabr. Spec. Ins. i, 1731, 419, 8, ♀; Mant. 258, 10; Ent. Syst. ii. 127, 11, ♀; Syst. Piez. 50, 11.

Sirex juvenescus, Klug, Mon. Su. Ger. Pt. iv, fig. 1, ♀, Var. iv, p. 38, fig. 3. ♂. Kirby, Faun. Bor. Am. 257, 356, 2, ♀.

Urocerus nitidus, Harris, Inj. Ins. 1835, 3rd. Ed. 1861, 540. ♀.

Sirex duplex, Shuckard, Mag. Nat. Hist. i. 1837, 630. ♀ ♂.

Head and thorax greenish-blue; abdomen ♀ cyaneus, legs yellow ferruginous; abdomen ♂, except at base, ferruginous, legs yellow ferruginous, hinder tibiæ and tarsi blue black. Length, ♀ 0.80—1.24, with ovip. 0.92—1.44. Br. wings 1.36—1.84 inch. Length, ♂ 0.45—1.30. Br. wings 0.90—1.90 inch.

♀.—Shining, antennæ 18-, 19-, 20-, 22-jointed, black; color of head

and thorax greenish blue, of abdomen blue or violet; the whole body, except abdomen, rather closely covered with blackish hair; anal mucro lengthened, pointed, not shouldered at base, but diminishing equally in size; edges serrate, surface rugose; ovipositor nearly or quite the length of abdomen including mucro; base of ovipositor ferruginous; legs yellowish ferruginous; their coxæ and trochanters blue; wings hyaline, obscure at apex, nerves yellowish; second brachial cell with complete cross nervure. ♂. The male has the antennæ 18-jointed; the abdomen ferruginous, with a violet reflection, except the two or three basal segments, which are cyaneous; the hinder femora yellow ferruginous, but their tibiæ and tarsi cyaneous, with the two apical joints rufous; the anal mucro shorter, but presenting the same general shape, seen from beneath; wings as in female.

Var.—A specimen from Canada has four inner under wing cells.

N. H., Conn., N. Y., Colorado, Chilyunk Depot, Wash. Territory, (Smiths, Inst.). Europe.

This may be considered as the American representative of *Urocerus juvenus* of Europe, if it is not actually the same species. Mr. Shuckard however, (Mag. Nat. Hist. New. Ser. i, 1837, 630) thinks it a separate species, because in the *U. cyaneus* the terminal mucro in both sexes is more acuminate, and the ovipositor of the female longer; because it inhabits in plantations side by side, only the American spruce fir (*Pinus nigra*), while the time of its coming forth is in May and June, after which it is rarely found. The *juvenus* attacks only the Scotch fir (*Pinus sylvestris*), and appears toward the end of July and never earlier. Mr. Ingpen (*Trans. Ent. Soc. Lond.* ii, 1838, p. lxxxvii) speaks of immense numbers of *Sirex duplex*, being bred from lumber which is supposed to have come from Canada, and gives remarks at length on the habit of the insect. Mr. Shuckard names it *Sirex duplex*, on the ground that Fabricius description is not fully determinate, and yet it seems hardly possible, after referring to the original description, to consider this anything else, as there is no other American species at all like it.

4. *Urocerus areolatus*.

Urocerus areolatus, Cresson, Trans. Am. Ent. Soc. i, 375, 1, ♀.

“♀.—Black, with a bluish-green reflection; head clothed with black hairs; vertex with large, deep, confluent punctures, and three rather deep, longitudinal furrows; the surface around and about the ocelli rugose; cheeks polished, sparsely punctured; clypeus longitudinally striated; antennæ black, shining, punctured, as long as the head and

thorax, 24-jointed; thorax above coarsely rugose, except middle of mesothorax, which is almost smooth; sides of prothorax above more coarsely rugose than rest of thorax; pleura coarsely punctured; wings violaceous-black, darker at base and along costa; legs slender, entirely shining black, tinged with blue-green, femora deeply punctured, first joint of posterior tarsus three-fourths the length of the tibia; claws rufo-piceous, with a strong inner tooth, removed from the tip; abdomen above steel-blue, with a slight velvety appearance, very finely sculptured; the venter and sides of dorsal segments shining and tinged with greenish, the former sparsely punctured; terminal dorsal impression deep and rounded; anal horn (cornus) shaped much as in *U. cyaneus*, being acutely conical, not at all shouldered, much flattened at base above, apex tuberculate, serrate on the sides; ninth segment convex on the sides, smooth and polished, with a few scattered punctures; ovipositor longer than the abdomen, piceous. Length 14 lines; with ovipositor 17 lines."

New Mexico. One specimen. Not seen.

5. *U. nigricornis*.

Sirex nigricornis, Fabr. Spec. Inst. i, 1781, 418, 3, ♀; Mant. Ins. 257, 4; Ent. Syst. ii. 425, 5. ♀; Syst. Piez. 49, 5.

"Thorax blue black, hairy; abdomen ferruginous, at base cyaneous." Length ♀, 0.56—1.02, with ovip. 0.64—1.16. Br. wings 1.06—1.80 inch. Length ♂, 0.48 0.80. Br. wings 0.80—1.24 inch.

Shining blue-black, antennæ black, about 22-jointed; head and thorax with an æneous tinge; two or three basal segments of abdomen and edges of each segment beneath, blue or violet; remainder of abdomen yellow ferruginous, including cornus and ovipositor sheath; anal cornus shorter than in *U. cyaneus*, somewhat convex in the middle, although not so abruptly shouldered as in *U. Edwardsii*, and serrate; ovipositor darker, not longer than abdomen without cornus; coxæ, trochanters and femora blue-black, sometimes dark ferruginous; remainder of legs yellow red, the last tarsal joint blackish; claws large, inner tooth separated; wings violaceous, sub-opaque, obscurity equally diffused, slightly darker on upper margin; second brachial cell with incomplete cross-nervure.

♂. —The male has the antennæ 18—20-jointed, the third and fourth articles ferruginous; abdomen like the female, but shorter and stouter; the cornus short and shouldered, with an acute point, the posterior tibiæ and tarsi blackish piceous, the two apical joints of tarsi rufous, with a blackish mark on the apical joint; wings yellow hyaline, their margins

obscure, nervures yellowish, second brachial cell with an incomplete cross nervure.

New York, (J. Akhurst), 4 ♀, 3 ♂. California, (Coll. Am. Ent. Soc.).

The males were taken in the same locality with the females. They are almost precisely like the males of *U. cyaneus*. The cornus in this is shorter, the hinder femora blue or blackish and the wing cells agree with those of the female. Except in the color of the abdomen, they are also much like *U. zonatus*. Specimens vary much in size.

♂.—Apical cornus of female constricted at base, spear-shaped.

6. *U. albicornis*.

Sirex albicornis, Fabr. spec. Ins. i, 1781, 419, 9, ♀; Mant. Ins. 258, 2; Ent. Syst. ii, 127, 12, ♀; Syst. Piez. 51, 12.

Urocus albicornis, Harris, Inj. Ins. 2nd. Ed. 427. Fitch, Nox. Ins. iv, 45, 252.

Black, with a spot on each side of the head and a band on the antennæ and legs, white. Length ♀ 0.72—1.04, with ovip. 0.92—1.44. Br. wings 1.30—1.96 inch.

♀.—Shining black; antennæ 21-, 22-, 23-jointed, the three or four basal joints and from 3—5 apical joints black or ferruginous, remainder white; first joint longer than third; head more polished behind eyes than *U. Edwardsii*, sides of abdomen somewhat polished, apical segment shining, punctured beneath, legs pitted; cornus long, much constricted at base, spear shaped, serrate; ovipositor not as long as abdomen and cornus combined; a large oval spot on each side of head, back of eyes, a small round spot on each side of 7th segment of abdomen and a band on the apical half of all the tibiæ and tarsi yellow white; a rufous spot at base of ovipositor; wings violaceous, obscure, darkest on costal margin, second brachial cell without cross nervure.

Var. CALIFORNICUS — ♀. A faint red spot on the side of seventh segment; wings smoky-yellow.

New England, N. Y., N. W. T., Lake Winnipeg, Chilyunk Dep. Wash. Terr. (Smiths. Inst.). England.

Dr. Harris states that the male has a black head, with a white spot on each side behind the eyes; thorax and legs black; abdomen flattened and rust colored and ends with a flattened horny point.

A specimen from Louisiana agrees with this description, the abdomen being entirely rust colored. The antennæ are 22-jointed, the first twelve joints blackish, remainder white; a white spot behind the eyes and an indistinct spot on the shoulders. Legs as in *U. abdominalis*; wings the color of those of female, equally distributed, except the first brachial cell, which is clearer. Found on the pine in July. This is

well known in England and is supposed to be imported in timber from Canada.

7. *U. abdominalis*.

Sirex abdominalis, Harris Catalogue, 1835.

Urocercus abdominalis, Harris, Inj. Ins. 3d. Ed. 540, ♂. Fitch, Nox. Ins. iv, 45, 253, ♂.

Shining black, with a spot on each side of the head and a band on the antennæ, and the abdomen yellow red. Length, 0.76—0.80. Br. wings 0.20—1.30 inch.

♂.—Shining black, tinged with blue; antennæ 24—25-jointed, ends black, the band in the middle yellow rufous, sometimes almost black; an oval spot behind each eye, mouth below antennæ, and a spot on each corner of collar yellow red, (these two latter sometimes color of body); the third, fourth, fifth and sixth segments of tergum yellow rufous; legs blue black, tip of the four anterior femora and legs beneath, the base of posterior tibiæ and first tarsal joint and the last joint of tarsi reddish yellow; wings yellowish hyaline, sometimes clouded with black, apex clouded, nervures yellowish, cross-nervure of second brachial wanting; cornus acute, not constricted, but as in males of other species.

Massachusetts, (Harris Coll., Coll. Am. Ent. Soc.); New York.

Six specimens examined. It is difficult to decide whether this is the male of *U. albicornis* or of *U. flavicornis*, but it seems most likely to belong to the first. Dr. Harris states that it is found in the trunks of the white pine in July.

8. *U. Cressoni*.

Urocercus Cressoni, Norton, Proc. Ent. Soc. Phil. iii, 1864, 16, 34, ♀.

Black, antennæ partly white, spot back of eyes and apex of abdomen rufous, base of hinder tibiæ white. Length 0.64, with ovip. 0.86. Br. wings 1.24 inch.

♀.—Black; antennæ 20-jointed, the ten apical articles straw white, the base of the eleventh and tips of the apical article brown; a rufous spot (not defined at edges) back of each eye; the six basal segments of abdomen of a soft velvety violaceous brown; remaining segments rufous; cornus compressed at base, lance shaped; ovipositor not longer than abdomen and cornus together; legs black, the base of posterior tibiæ and of first joint of their tarsi white; remaining joints blackish; all the claws red; wings obscure brownish violaceous, nervures piceous; cross nervure of second brachial cell incomplete. (Penn.)

Var. *α*.—♀ Antennæ 21-jointed, the ten basal joints black, remaining eleven white, tips of apical joints brown, basal plates yellowish, a black spot at sides of basal segment and beneath, the base of four hinder tibiæ and tarsi yellowish; wings violaceous. (Albany.)

Penn., N. J., (Coll. Am. Ent. Soc.). Albany, N. Y. (Dr. Peck.)

Var. *b*.—♀. Antennæ 22-jointed, the ten basal joints black, the next eleven yellow white, apical joint very small, brown black; a spot behind each eye, and the basal one-fourth of hinder tibiæ and of their first tarsal joint, yellow-white; a band across most part of segments one, five and six of tergum, and all the remaining apical segments of abdomen including cornus, ruby-red; second, third and fourth segments and terebra black; wings dark violaceous.—(New Jersey.)

This fine species is allied to *U. albicornis*, which it resembles in form, in having part of the antennæ, a spot behind each eye and the basal part of certain tibiæ and tarsi, white. It differs in having the ten basal joints of antennæ black, the tergum more or less banded with rufous and only the hinder tibiæ and tarsi white-banded. The velvety appearance of the tergum is owing to the numerous delicate punctures upon its upper surface.

9. *U. tricolor*.

Urocerus tricolor, Provancher, Nat. Canadien, 1868, p. 17.

"Black, on the vertex two luteous maculæ; antennæ black at base, at apex white; wings deeply obscure; abdomen at base luteous, in the middle purple-brown, at the apex red. Female."

"Black; two yellow spots behind the eyes; antennæ 21-articulate, the 6 basal articles (8 on one side) black, remainder white, the apical article brown at tip; abdomen with the two first and the last segments yellow, the third, fourth and fifth of a deep violet, the remainder of a velvety-red; cornus lance-shaped; venter black at base, an orange yellow at summit, polished; the two first pairs of legs with the knees, summit of thighs, base of tibiæ and of tarsi yellow; posterior legs with the tibiæ and first articles of tarsi, except at their apex, base of second and fifth article also yellow. Long 13 lines.

"Three Rivers, Canada." (Rev. L. Provancher) Not seen. Described from one specimen. This seems allied to *U. Cressoni* and may prove to be a variety of it.

10. *U. flavicornis*.

Sirex flavicornis, Fabr. Spec. Ins. i, 1981, 419, 4, ♀; Mant. Ins. 257, 5; Ent. Syst. ii, 125, 6; Syst. Piez. 49, 6.

Sirex bizonatus, Stephens, Cat. 1829, 342, 3998; Brit. Ins. Mand. vii, 114, 2, pl. xxxvi, 1. Kirby, Faun. Bor. Am. iv, 256, 355, 1.

Urocerus flavicornis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 247.

"Head black, with the antennæ and eyes yellow; thorax villose, black, immaculate; abdomen with segments one, two, seven and eight, above yellow, beneath immaculate; cornus clavate, acuminate, serrate, yellow; aculeus black; legs yellow, with the femora black." (Fab. Ent. Syst. ii, 125, 6.) Length 0.88—1.40, with ovip. 1.04—1.56. Br. wings 1.60—2.00 inch.

♀.—Black, antennæ 23—25-jointed, yellow; head and thorax rather densely covered with blackish hair; abdomen wide and stouter than in other species, cornus long, constricted, lance shaped, serrate, ovipositor not as long as abdomen with cornus, sheath polished, roughened at tip; a large oval spot outside of each eye, a band on the second, seventh and half of eighth segments of tergum, cornus and base of ovipositor reddish yellow; legs at base black; tips of femora, the tibiæ and tarsi yellowish, apex of posterior tibiæ and tips of claws blackish; wings yellow hyaline, nervures yellowish; cross-nervure of second brachial cell wanting.

Labrador, Can., Conn., N. Y., Colorado, Mackenzie River, Gt. Lake, Wash. Terr. Yukon River, Arct. Am. (Smiths. Inst.).

Well known in England by the name of *S. bizonatus*. Taken near London. Supposed by Mr. Kirby to have been imported in timber from Canada.

It is difficult to see how Mr. Stephens could give it this name, if he had looked at the description by Fabricius above quoted.

B.—Ovipositor longer than the whole body.

11. *U. caudatus*.

Urocerus caudatus, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 247, 2, ♀.

Black, prothorax narrow, rugose, with a stripe on each side and a spot on each side of occiput whitish; legs obscure luteous; ovipositor longer than abdomen. Long ♀, 0.60—1.00, with ovip. 0.92—1.56. Br. wings, 1.00—1.56 inch. Long ♂, 0.72. Br. wings, 1 inch.

♀.—Black, rather slender, sericeous, head as wide as thorax; antennæ long, 23-jointed, basal article pitted; head and thorax sparsely pubescent, closely pitted, summit and sides of head polished; collar produced, not stout; cornus constricted, sub-lanceolate, scarcely enlarged, polished, serrate (not so slender as in *U. flavicornis*), ovipositor longer than body from head to tip of cornus, obliquely channeled, piceous, about the base rufous; a round dot on each side of occiput, a wide stripe from tegulæ over forward angles of prothorax to neck, white; legs yellow red, all of one color; first joint of posterior tarsi nearly as long as tibiæ; wings hyaline, apical margins clouded, a small clouded spot near end of lanceolate cell; second brachial cell without second cross-nervure.

♂.—The male is quite slender, shining, with long abdomen; antennæ 21-jointed; no white spots on sides of head; a white stripe on collar as in female; abdomen with the half of each segment polished; cornus long, not constricted, granulated, a serrated ridge around the sides;

legs dark ferruginous; coxæ and base of hinder pair blackish; wings as in female.

Canada, Colorado (Coll. Am. Ent. Soc.) H. B. T., Youkon River, Arct. Am. (Smith. Inst.). 5 ♀, 1 ♂.

This is either the *U. Spectrum* of Europe or closely allied to it. Klug separates *U. Spectrum* from other species by the palpi: maxillary uni-articulate; labial tri-articulate. I have not examined the palpi of this species, which are retracted.

5. **TREMEX**, Jurine.

Tremex Jurine.

Xyloterus, Harting.

Sirex, Linn., Fabr. &c.

Wings with two marginal cells, the second incomplete, and three sub-marginals, the second large, receiving two recurrent nervures; lanceolate cell with oblique cross-line; under wings with two inner cells.

Antennæ filiform, shorter than to base of thorax, 13 or 14-jointed.

Maxillary palpi 1-articulate, labial palpi, 2-articulate, the second thick and hairy, body and ovipositor like that of *Urocerus*; anterior tibiæ and tarsi depressed, the posterior pair long and flattened, the first tarsal joint of females as long as tibiæ, and of males much flattened and wide.

Habits like *Urocerus*.

1. **T. columba**.

Sirex columba, Fabr. Syst. Ent. 1775, 325, 2; Spec. Ins. i, 1781, 418, 2; Mant. Ins. 1787, 257, 2; Ent. Syst. ii, 1795, 105, 3; Syst. Piez. 1804, 49, 3. Linn. Syst. Nat. ii, 929, 2; Amœn. Acad. vi, 412, 88.

Sirex cinctus, Drury, Exot. Ins. ii, App.

Sirex pensylvanicus, DeGeer, Ins. iii, 393, 1, tab. 30, fig. 13.

Tremex columba, Drury, Exot. Ins. 2nd. Ed. ii, 78, pl. xxxviii, fig. 2, ♀. Say, Am. Ent. ii, 74, pl. xxxii, 3, ♀. Harris, N. E. Farmer, v, 165, 211; Inj. Ins. 536.

Tremex obsoletus, Say, West. Quar. Rep. ii, 1823, 73; Am. Ent. ii, 1825, 74, pl. 32, fig. 2, ♂.

♀.—Head ferruginous, body black, with six yellow bands on abdomen. ♂. Color ferruginous, irregularly varied with black. Length 1.08—1.46; with ovip. 1.28—1.78. Br. wings 1.72—2.36 inch. Length ♂ 0.76—0.92. Br. wings 1.36, —1.46 inch.

♀.—Antennæ 14—15-jointed, filiform, not as long as to base of thorax, yellowish, with a black band (sometimes obsolete) on from three to six of the middle articles; head and prothorax apparently granulated, mesothorax closely punctured; head ferruginous, with a blackish line through ocelli; prothorax, a broad stripe to scutel, scutel and most of pleura ferruginous (the two last sometimes darker); remainder of thorax and most of abdomen black; sides of basal plates (more or

less distinctly), second and a band interrupted in middle, on the third, fourth, fifth, sixth, seventh and eighth segments of abdomen, a dot at apex, and generally the cornus and the enclosed space at its base yellow; venter yellow or yellow banded; remainder of spine and the valves of oviduct dark ferruginous; ovipositor black; cornus short, serrate acuminate; ovipositor as long as abdomen and cornus combined; legs reddish yellow; coxæ and trochanters black; femora above and at base blackish; all the tarsi flattened, the posterior pair most, the first posterior tarsal joint longer than tibiæ, concave within; wings sub-opaque, varying from black to yellowish, most obscure about the base and upper margin; second brachial cell without additional cross line.

♂.—The colors of the male are obscure, varying between ferruginous and black, the yellow spots and bands wanting; antennæ 14-jointed, color as in female; thorax obscure, sometimes wholly black; abdomen polished, blackish, with bands more or less ferruginous on the fourth, fifth, sixth, seventh and eighth segments and the cornus (abdomen sometimes wholly black with a fine punctuation and striation visible); cornus rather longer than with female, serrate, rough beneath; legs pale ferruginous; coxæ, trochanters, basal half of four anterior femora, posterior femora, a line down anterior tibiæ, apical two-thirds of four hinder tibiæ and of first joint of their tarsi and the two next joints of tarsi, black (the black is sometimes wanting below the femora), first joint of posterior tarsi not so long as tibiæ or as the remaining tarsi taken together, the tibiæ and tarsi much flattened and concave within; wings less obscure, yellowish, nervures red yellow.

Canada, Northern and Middle States, Missouri.

The male does not look at all like the female. The larvæ are like those of *Urocerus*. The eggs are deposited in several kinds of trees. It is known to attack the pear, elm, sycamore and maple, but is not often so common as to be injurious to more than isolated trees. It seems probable also that it does not begin upon trees which are entirely sound.

Tremex obsoletus, Say, may possibly be the male of *T. sericeus*, but it is almost precisely like a male of *T. columba* from New York.

Dr. Harris states that the larvæ are destroyed by *Rhyssa atrata* and *R. lunator*.

This is much like the *T. fuscicornis* of Europe.

2. *T. sericeus*.

Tremex sericeus, Say, West. Quart. Rep. ii, 1823, 13; Am. Ent. ii, 1825, 73, ♀, pl. 32, 1.

Tremex Servillei, Brullé, Hist. Nat. Ins. Hym. iv, 645, pl. 45 fig. 2, ♀.

"Ferruginous, wings subviolaceous, prothorax tuberculate." Length 1.20—1.48; with ovip. 1.36—1.92. Br. wings 1.72—2.36 inch.

♀.—Reddish or yellowish ferruginous; antennæ 15-jointed, generally of one color, sometimes with a blackish band; mouth blackish; a black spot at times about the ocelli, two spots on sides of mesothorax, sutures of metathorax and the breast black (all of these spots sometimes wanting); tergum sericeous, paler, second segment yellowish; cornus short, serrate, acuminate; ovipositor black, as long as abdomen with cornus; sheath pale, legs darkest at base, changes of color not sharply defined; wings sub-opaque, sub-violaceous, nervures yellowish.

Tennessee, Maryland, Missouri.

This seems more common in the Western States. In form it is precisely like *T. columba*, but the difference in color and marking seems to be distinct. It is probable that the male will not differ much from the male of *T. columba*.

Mr. Say has described a female but figured what appears to be a male.

6. *TEREDON*, nov. gen.

Wings with two marginal and four submarginal cells, the second and third each with a recurrent nervure, lanceolate cell with straight or slightly oblique cross-line, under wings with two middle cells.

Antennæ fusiform, five or six-articulate; labial palpi apparently as in *Tremex*, the second joint enlarged and truncate. Body as in *Tremex*, ovipositor exerted, the first joint of hinder tarsi in both sexes longer than tibiæ, wide, much flattened as in *Cræsus*, but produced, at one side beyond the two next tarsal joints, remaining joints short, the second third and fourth, not longer together than the fifth.

This may be considered a subgenus of *Tremex*, which it resembles precisely in appearance of head and body, but from which the form of the antennæ and the dilated tarsi serve to distinguish it. The wings are like those of *Urocærus*. The form of the antennæ is very singular, the third being shorter than the fourth, and the fifth longest, unless it is composed of two joints closely soldered, of which there is some appearance.

1. *T. cubensis*.

Tremex cubensis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 2, ♀.

"Length 10 lines, Br. wings 16 lines."

♀.—Yellowish. mesothorax. scutelli, pleura, anterior portion

of metathorax, femora and several uneven bands on abdomen, brown or blackish; apical segment of abdomen dull ferruginous; wings deep yellowish, hyaline, dusky at tips."

Cuba. (Coll. Am. Ent. Soc.)

The appearance of this fine insect is very much like that of *Tremex columba*, for which it might readily be taken at first sight.

2. *T. latitarsis*.

Tremex latitarsis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 3, ♂.

"♂.—Head, thorax and legs blue-black; abdomen ferruginous; wings fusco-hyaline; hind legs broad and flat."

Cuba. (Coll. Am. Ent. Soc.)

A D D E N D A.

Ptilia, Sec. 2.—2nd submarginal cell receiving two recurrent nervures.

Ptilia texana, n. sp.

Length 0.25. Breadth of wings, 0.45 inch.

♀.—Color black; a spot on mandibles near the tip, the prothorax except a black spot on its front, mesothorax, tegulæ, anterior angle and scutellum honey-yellow; legs black, with the tips of knees and parts below, white, except the anterior tarsal joint, the tips of four hinder tibiæ and most part of their tarsi, which are black; second joint of antennæ half as long as first; third joint about the length of thorax, diminishing in size to tip, not extremely slender, ciliate; lower ocellus in a deep basin extending to base of antennæ, a high carina between antennæ prolonged down the nasus; a curved notch at tip of nasus. Abdomen stout as in *Selandria*; tibiæ without side spurs; wings subhyaline, clearer toward apex, marginal cell of only the upper wings appendiculate; first submarginal cell long, angulate at base, second longer, receiving two recurrent nervures, the second near apical end, third cell wider than long, the two cross nervures curved outward; lanceolate cell petiolate, short, stout; underwings with two inner cells, the lanceolate cell wanting.

♂.—Exactly resembles the female, except that the antennæ are bifurcate, about one fourth longer, more slender, ciliæ about twice as long as width of joint.

Texas. (Coll. Am. Ent. Soc.)

Cladius simplicicornis, n. sp.

Black, legs below the knees pale, apical tarsi blackish. Length 0.25. Br. wings 0.50 inch.

♂.—Shining black; antennæ pilose with stiff black hair; joints stout, enlarged at tips but not globose, simple, no spine at base of third

joint within, third joint shorter than fourth; body wholly black, basal half of all the tibiae white; apical half of four anterior tibiae and first joint of their tarsi waxen white; apical half of hinder tibiae and remainder of all the tarsi blackish; wings hyaline, their basal half faintly clouded; the lower inner cell of hinder wing not reaching as far as the apex of the cell above it.

Maine (A. S. Packard. Jr.); Norway, Me. (S. I. Smith).

Two ♂. In *C. isomera*, the lower inner cell of under wing either coincides with that above it at its apical end or extends beyond it. The antennae are longer. This is somewhat like *Priophorus pilosicornis*, sent me from England by Francis Walker, Esq.

Euura salicis-nodus. Walsh, ♂.

I have received from Mr. Walsh the female, which differs from the male in having the pale inner orbital lines distinct throughout. The wing scales, anterior angle, a round spot in middle of each of basal plates, and the whole of abdomen, above and below, honey-yellow. Each segment of abdomen tipped with black, above and below, most distinctly upon the tergum. The anal styles are tipped with black. Both ♂ and ♀ bred by Mr. Walsh from galls received from New York.

Cræsus laticulus, n. sp.

Length 0.48 inch.

♀.—Black; tegulae, a spot on sides of basal plates and of second and third segments of abdomen whitish; apex of mandibles and the legs, ferruginous, with the apex of hinder femora, the apical two-thirds of their tibiae and the most part of the first tarsal joint blackish; antennae very long (0.36), quite slender; each ocellus at the head of a pentagonal basin; a protuberance between antennae, nasus incurved; some scattered sub-obsolete oval punctures on the head and mesothorax; scutellum polished, pleura dull, but not punctured; tergum with delicate cross striae; abdomen slender, cylindrical; hinder tibiae one-half longer than first and second, somewhat enlarged, twice as wide as the others, with a deep channel down the upper side; all the joints of their tarsi enlarged and flattened, the first joint widest, but not as wide as tibiae, the patellae long and white, the claws with a strong inner tooth; wings ample, hyaline, nervures piceous, stigma black; first transverse submarginal nervure obsolete, except its rudiments near the nerves; second recurrent nervure received near the transverse nervure.

Massachusetts, (Coll. Am. Ent. Soc.); Virginia, (Peabody Institute, Salem). Two ♀.